BRUHAT BANGALORE MAHANAGARA PALIKE

Name of the Work : Improvements to 20 numbers major junctions with greenery to improve air quality around the junction

DRAIN WORKS JUNCTION CIVIL WORKS ESTIMATE

SL no	Description of work	Unit	Nos.	Dimension			Quantity	Unit
				Length	Breadth	Depth		
1	**Earth work excavation** for Foundation by Mechanical means depth upto 1.50m, as per drawing and technical specifications, including setting out, shoring, strutting, arricading, caution lights, including cost of explosives, dressing of excavated surfaces, disposing off or levelling the excavated stuff or sorting & stacking the selected stuff for reuse in a radius of 50 m and lift upto 1.5 m including cost of labour, blasting materials, tools, usage of Machinery & all other appurtenaces required to complete the work complete.							
	In Hard Rock (requiring blasting) Depth upto 1.50m							
	Unit	Cum						
	For Desilting in existing drains		14	420.00	0.90	0.60	3175.20	
	For New drain works		12	125.00	0.90	0.90	1215.00	
	Total						**4390.20**	Cum
2	Providing and laying in position **Cement Concrete** for all Sub structures of building, Irrigation works, Sub structure works of bridges, Drain works & other parallel works from 0.50m to 3.50 m height. The granite/trap/basalt crushed graded coarse aggregates and fine aggregates as per relevant IS Codes machine mixed with super plasticisers, laid in layers, well compacted using needle vibrators, providing weep holes wherever necessary, including all lead & lifts, cost of all materials of quality, confirming to the requirements of relevant IS codes, labour, Usage charges of machinery, curing and all other appurtenances required to complete the work as per technical specifications..							
	M30 Design Mix Using 20 mm nominal size graded crushed coarse aggregates							
	Unit	Cum						
	For New Drain Slabs		12	125.00	0.90	0.15	202.50	
	Total						**202.50**	Cum
3	**Ready Mix Concrete** (RMC) with Cement & Cementitious Materials. Providing and laying in position Ready Mixed or Batch Mixed concrete as per IS 10262 mix design procedure for Cement Concrete works in all types of Structures other than Road works, using coarse aggregate and fine aggregate derived from natural sources, Ordinary Portland Cement (OPC) @ 75% & GGBS @ 25% proportion, admixtures to accelerate / retard setting of concrete, to improve durability and workability without impairing strength; including pumping of concrete to site of laying, curing, carriage for all leads; but excluding the cost of centering, shuttering, finishing and reinforcement as per direction of the Engineer-in-charge.							
	Unit	Cum						
	For Drain Base slab/Raft		12	125.00	0.90	0.15	202.50	
	For Drain side walls		12	250.00	0.15	0.75	337.50	

	Total						**540.00**	Cum
4	Steel Fabrication. Supplying, fitting and placing TMT FE 550 / 550D **Steel Reinforcement** including cost of all materials, machinery, labour, cleaning, straightening, cutting, bending, hooking, laping/welding joints, tying with binding wire / soft annealed steel wire and other ancilary operations complete as per drawing and technical specification.All other type of structures							
	Unit	Tonne						
	Considering 60kg/Cum for item No.3	(199.26)*0.06					**32.40**	Tonne
5	Providing and laying **100mm** thick **pre-cast cover slabs** over drains & Rain pit of width not exceeding 800 mm using M20 concrete reinforced with Micro Alloyed High carbon steel with 3mm - 3ply wired steel @ 2.00 kg/m2, slabs jointed in CM 1:3 proportion and nicely finished Including providing holes in the Cover slabs wherever necessary for easy drain age of surface water including of labour, materials, scaffolding, usage of machinery, curing, lead and lift charges etc, Complete. MORTH Specification No. 406							
	Unit	Sqm						
	For Existing Drain Slabs		12	125.00	1.00	--	1500.00	
	For New Drain Slabs		12	125.00	1.00	--	1500.00	
	Total						**3000.00**	Sqm

BRUHAT BANGALORE MAHANAGARA PALIKE

Name of the Work : Improvements to 20 numbers major junctions with greenery to improve air quality around the junction

TAGORE CIRCLE CIVIL WORKS ESTIMATE

SL no	Description of work	Unit	Nos.	Dimension			Quantity	Unit
				Length	**Breadth**	**Depth**		
1	**Dismantling of cement concrete pavement** by mechanical means using pneumatic tools, breaking to pieces not exceeding 0.02 m3 in volume and stock piling at designated locations and disposal of dismantled materials and stacking serviceable and unserviceable materials separately.							
	Total						**89.55**	Cum
2	**Dismantling kerb stone** by manual means and disposal of dismantled material with all lifts and							
	Unit	Cum						
	Kerbs		1	490.00		0.15	73.50	
	Total						**73.50**	Cum
3	**Earth work excavation** for Foundation by Mechanical means depth upto 1.50m, as per drawing and technical specifications, including setting out, shoring, strutting, barricading, caution lights, including cost of explosives, dressing of excavated surfaces, disposing off or levelling the excavated stuff or sorting & stacking the selected stuff for reuse in a radius of 50 m and lift upto 1.5 m including cost of labour, blasting materials, tools, usage of Machinery & all other appurtenaces required to complete the work complete.							
	In Hard Rock (requiring blasting) Depth upto 1.50m							
	Unit	Cum						
	For Footpath Kerb		1	768.00	0.45	0.30	103.68	
	For Island Kerb		1	112.00	0.45	0.30	15.12	
	For Pole Lights		40.00	0.60	0.60	0.60	8.64	
	Total						**127.44**	Cum
4	Loading and Unloading of Stone Boulder/Stone aggregates/Sand/Kankar/Moorum. (Tipper 5.5							
	Unit	Cum						
	Demolished works						**290.49**	
	Total						**290.49**	Cum
5	Providing and laying in position **Cement Concrete** for levelling course for all works in foundation. The granite/trap/basalt crushed graded coarse aggregates and fine aggregates as per relevant IS Codesmachine mixed, laid in layers not exceeding 150 mm thickness, well compacted using plate vibrators, including all lead & lifts, cost of all materials of quality, labour, Usage charges of machinery, curing, and all the other appurtenances required to complete the work as per technical specifications.							
	Mix **1:3:6** Using **20 mm** nominal size graded crushed coarse aggregates							
	Unit	Cum						
	For Footpath Kerb		1	768.00	0.45	0.15	51.84	
	For Island Kerb		1	112.00	0.45	0.15	7.56	

	For Footpath flooring		1	597.00		0.15	89.55	
	For Island flooring		1	448.00		0.15	67.20	
	For seating 1		2	20.00	0.45	0.15	2.70	
	For Planter Seating 1		2	10.00	0.45	0.15	1.35	
	For seating 2		2	16.00	0.45	0.15	2.16	
	For Planter Seating 2		2	8.00	0.45	0.15	1.08	
	For seating 3		2	12.00	0.45	0.15	1.62	
	For Planter Seating 3		2	6.00	0.45	0.15	0.81	
	For Pole Lights		40.00	0.60	0.60	0.60	8.64	
	Total						**234.51**	Cum
6	Providing, laying, spreading and compacting graded stone aggregate to **wet mix macadam** specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver/grader in sub-base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density. MORTH Specification No. 406							
	Unit	Cum						
	For Footpath Kerb		1	768.00	0.45	0.15	51.84	
	For Island Kerb		1	112.00	0.45	0.15	7.56	
	For Footpath flooring		1	597.00		0.15	89.55	
	For Island flooring		1	448.00		0.15	67.20	
	For seating 1		2	20.00	0.45	0.15	2.70	
	For Planter Seating 1		2	10.00	0.45	0.15	1.35	
	For seating 2		2	16.00	0.45	0.15	2.16	
	For Planter Seating 2		2	8.00	0.45	0.15	1.08	
	For seating 3		2	12.00	0.45	0.15	1.62	
	For Planter Seating 3		2	6.00	0.45	0.15	0.81	
	Total						**225.87**	Cum
7	Providing **Coursed rubble masonry** (first sort) with hard stone in foundation and plinth with Cement mortar 1:6 (1 cement : 6 coarse sand).							
	Unit	Cum						
	For seating 1		2	20.00	0.45	0.45	8.10	
	For Planter Seating 1		2	10.00	0.45	0.45	4.05	
	For seating 2		2	16.00	0.45	0.45	6.48	
	For Planter Seating 2		2	8.00	0.45	0.45	3.24	
	For seating 2		2	12.00	0.45	0.45	4.86	
	For Planter Seating 2		2	6.00	0.45	0.45	2.43	
	Total						**29.16**	Cum
8	Providing **Brick work** with common burnt clay Non Modular bricks of class designation 3.5 in superstructure above plinth level in all shapes and sizes in Cement mortar 1:6 (1 cement : 6 coarse sand) including cost of all materials, labour, scaffolding and usage charges of machinery & other incidental charges complete as per the direction of engineer incharge of work.							
	Unit	Cum						
	For seating 1		2	20.00	0.45	0.45	8.10	
	For Planter Seating 1		2	10.00	0.45	0.45	4.05	

	For Planter Seating 1 backrest		2	10.00	0.45	1.05	9.45	
	For seating 2		2	16.00	0.45	0.45	6.48	
	For Planter Seating 2		2	8.00	0.45	0.45	3.24	
	For Planter Seating 2 backrest		2	8.00	0.45	1.05	7.56	
	For seating 3		2	12.00	0.45	0.45	4.86	
	For Planter Seating 3		2	6.00	0.45	0.45	2.43	
	For Planter Seating 3 backrest		2	6.00	0.45	1.05	5.67	
	Total						**51.84**	Cum
9	Providing **15 mm cement plaster** on rough side of single or half brick wall finished with a floating coat of neat cement of mix 1:3 (1 cement: 3 fine sand) including rounding off corners wherever required smooth rendering, providing and removing scaffolding, including cost of materials, labour, curing complete as per specifications and as per directions of Engineer-in-charge.							
	Unit	Sqm						
	For Seating 1		2	20.00	--	1.35	54.00	
	For Seating 1 side surfaces		4	0.45	--	0.45	0.81	
	For Planter Seating 1		2	10.00	--	1.35	27.00	
	For Planter Seating 1 back rest wall		2	6.00	--	1.05	12.60	
	For Planter Seating 1 back rest wall coping		2	6.00	--	0.30	3.60	
	For seating 2		2	16.00	--	1.35	43.20	
	For Seating 2 side surfaces		4	0.45	--	0.45	0.81	
	For Planter Seating 2		2	8.00	--	0.90	14.40	
	For Planter Seating 2 back rest		2	6.00	--	0.60	7.20	
	For Planter Seating 2 back rest wall coping		2	6.00	--	0.30	3.60	
	For seating 3		2	12.00	--	1.35	32.40	
	For Seating 3 side surfaces		4	0.45	--	0.45	0.81	
	For Planter Seating 3		2	6.00	--	0.90	10.80	
	For Planter Seating 3 back rest		2	6.00	--	0.60	7.20	
	For Planter Seating 3 back rest wall coping		2	6.00	--	0.30	3.60	
	Total						**222.03**	Sqm
10	Providing and laying **Black Lapotra Granite** stone flooring in linear as well as curvilinear portions of the building all complete as per the architectural drawings with 18mm thick stone slab over 20 mm (average) thick base of cement mortar 1:4 (1 cement : 4 coarse sand) laid and jointed with cement slurry and pointing with white cement slurry admixed with pigment of matching shade including rubbing , curing and polishing etc. all complete as specified and as directed by the Engineer-in-charge.							
	Unit	Sqm						
	For Seating 1		2	20.00	--	1.35	54.00	
	For Seating 1 side surfaces		4	0.45	--	0.45	0.81	
	For Planter Seating 1		2	10.00	--	0.90	18.00	
	For Planter Seating 1 back rest		2	6.00	--	0.60	7.20	
	For Planter Seating 1 back rest wall coping		2	6.00	--	0.30	3.60	
	For seating 2		2	16.00	--	1.50	48.00	
	For Seating 2 side surfaces		4	0.45	--	0.45	0.81	
	For Planter Seating 2		2	8.00	--	0.90	14.40	
	For Planter Seating 2 back rest		2	6.00	--	0.60	7.20	
	For Planter Seating 2 back rest wall coping		2	6.00	--	0.30	3.60	

	For seating 3		2	12.00	--	1.50	36.00	
	For Seating 3 side surfaces		4	0.45	--	0.45	0.81	
	For Planter Seating 3		2	6.00	--	0.90	10.80	
	For Planter Seating 3 back rest		2	6.00	--	0.60	7.20	
	For Planter Seating 3 back rest wall coping		2	6.00	--	0.30	3.60	
	Total						**216.03**	Sqm
11	Providing and laying **60mm** thick factory made precast M -30 grade **Cement Concrete Paver Block** as per IRC SP 63:2018 & IS 15658 for Cycle Tracks & Pedestrian Footpaths of approved shape and colour, laid in required pattern and including over 30mm thick compacted bed of coarse sand, filling the joints with fine sand etc. all complete as per the direction of Engineer-in charge. (WMM/WBM Base to be paid separately if necessary as per relevant technical specification).							
	Unit	Sqm						
	For Footpath flooring		1	597.00		--	597.00	
	Total						**597.00**	Sqm

12	Providing and laying flooring and steps fine dressed **granite stone slabs 40 mm** thick on cement mortar bed 1:6, 25 mm thick, and pointed with cement mortar 1:3 over existing cement concrete bed , including cost of materials, mortar, labour, curing complete as per specifications.							
	Unit	Sqm						
	Island Flooring		1	448.00			448.00	
	Total						**448.00**	Sqm
13	Supplying and fixing M15 grade precast **cement concrete Kerb stone**s for Roadway, Sidewalls and gutters fixed with CM 1:3 fixed and finsihed in line as per direction of Engineer in charge. (The cost of PCC shall be paid extra)							
	600 x 300 x 150 mm size							
	Unit	M						
	For Footpath Kerb		1	768.00	--	--	768.00	
	For Island Kerb		1	112.00	--	--	112.00	
	Total						**880.00**	M
14	Providing and applying tack coat with **RS1 Bituminous Emulsion** using emulsion pressure distributor at the rate of 0.20 kg/m2 on the prepared bituminous surface cleaned with mechanical broom							
	Unit	Sqm						
	For HRPC		3	7.00	8.00	--	168.00	
	Total						**168.00**	Sqm

15	Providing and laying **Bituminous Concrete** with 100 TPH capacity hot mix plant batch type using crushed aggregates of specified grading, premixed with bituminous binder VG-30, @ 5.4 per cent of mix and filler, transporting the hot mix to work site, laying with mechanical paver finisher to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH specification clause No. 507 complete in all respects.							
	Unit	Cum						
	For HRPC							
	Below Cobble stone							
			3	7.00	3.00	0.05	3.15	
	For Slopes							
			6	7.00	3.00	0.19	23.63	
						0.5 x 2.5 x 0.15		
	Total						**26.78**	Cum
16	Providing and laying 100mm thick factory made **precast M - 40 grade Cement Concrete Paver Block** as per IRC SP 63:2018 & IS 15658 for Commercial Traffic Axle load repetitions more than 10MSA upto 20MSA for Industrial Streets, Bus & Truck parking of approved shape and colour, laid in required pattern an including over 40mm thick compacted bed of coarse sand, filling the joints with fine sand etc. all complete as per the direction of Engineer-in-charge.							
	Unit	Sqm						
	For HRPC		3	7.00	3.00	--	63.00	
	Total						**63.00**	Sqm
17	Providing and laying of **hot applied thermoplastic compound** 2.5 mm thick including reflectorising glass beads @ 250 g/m2 area, thickness of 2.5 mm is exclusive of surface applied glass beads as per IRC:35:2015.The finished surface to be level, uniform and free from streaks and							
	Unit	Sqm						
	For Stop Lane		20	7.00	0.25	--	35.00	
	Zebra Crossings		90	4.00	0.50	--	180.00	
	End Lane		1	855.00	0.25	--	213.75	
	Divider lane		1	812.00	0.25	--	203.00	
	Total						**631.75**	Sqm
18	Supplying and Fixing of **Molded Shank Raised Pavement Markers / Cat's Eye** made of polycarbonate and ABS moulded body and reflective panels with micro prismatic lens capable of providing total internal reflection of the light entering the lens face and shall support a load of 16000 kg tested in accordance to ASTM D 4280 Type H and complying to Specifications of Category A of MORTH Circular No RW/NH/33023/10-97 DO III Dt 11.06. 1997. The height, width and length shall not exceed 50 mm, 100 mm and 102 +/- 2 mm and with minimum reflective area of 13 cm2 on each side and the slope to the base shall be 35 +/- 5 degree. The strength of detachment of the integrated cylindrical shanks, (of diameter not less than 19 +/- 2 mm and height not less than 30+/- 2 mm) from the body is to be a minimum value of 500 Kg. Fixing will be by drilling holes on the road for the shanks to go inside, without nails and using epoxy resin based adhesive as per manufacturer's recommendation and complete as directed by the engineer.The contractor shall submit a two year warranty for satisfactory field performance including stipulated							
	Unit	Sqm						

	Roads		120	--	--	--	120.00	
	Total						**120.00**	Sqm

19	**Retro-Reflectorised Traffic Signs** - Providing and fixing of retro- reflectorised cautionary, mandatory and informatory sign as per IRC:67:2022 made of Class C Type XI retro reflective sheeting fixed over 2 mm thick aluminium sheeting vide clause 801.3, 3mm/4mm thick Aluminium composite material sheet depending on the size of the sign fixed over the back support frame of min 25 x 25 x 3mm angle mounted on a mild steel circular pipe 65 NB, 3.2 mm thickness firmly fixed to the ground by means of properly designed foundation with M25 grade cement concrete 45 cm x 45 cm x 60 cm, 60 cm below ground level as per approved drawing.The sign shall be maintained as per section 12 of IRC:67:2022. **90 cm equilateral triangle**							
	Unit	Sqm						
	Roads		40	--	--	--	40.00	
	Total						**40.00**	Sqm
20	**Road Delineators** - Supplying and installation of delineators (road way indicators, hazard markers, object markers), 80-100 cm high above ground level, painted black and white in 15 cm wide strips, fitted with 80 x 100 mm rectangular or 75 mm dia circular reflectorised panels at the top, buried or pressed into the ground and conforming to IRC-79-2019 and the drawings.							
	Unit	Each						
	Roads		40	--	--	--	40.00	
	Total						**40.00**	Each
21	**Chevron Boards** - Supply and installation of retro- reflective **Chevron signboards of 600x450mm** made out of cube corner micro prismatic grade sheeting confirming to Type XI standards of IRC:67:2022 & ASTM D 4956-09 specification & fixed over 3 mm thick Aluminium Composite Panel sheet having minimum 0.30 mm thick aluminum skin on both sides & fixed over back support frame of 25x25x 3mm MS angle frame. Supported on 75 mm dia OR 75x75x6mm Mild steel with clear height of not less than 2.1 m from the ground level to the bottom of the Sign board & 60 cm below ground level. The sign post should be painted with one coat of red oxide paint and two coats of synthetic enamel paint of black and white colour with bands of 30 cm height, firmly fixed to the ground by means of foundation with M 20 grade cement, concrete foundation size of 45 cm x 45 cm x 60 cm including cost & conveyance of all materials, equipment, machinery &							
	Unit	No						
	Roads		20	--	--	--	20.00	
	Total						**20.00**	No
22	**Tubular Marker / Spring post 700 mm (Flexible Bollards)** - Providing Tubular marker made up of Polyurethane used to divide opposing lanes of road users shall be fixible in nature. Tubular marker having height 700 mm shall be having 75 mm Reboundable work zone retroreflective sheeting as per ASTM 4956 S2 (Application of Tubular Marker shall be done as per IRC:SP 55:2014)							
	Unit	No						

	Roads		40	--	--	--	40.00	
	Total						**40.00**	No
	NON SR ITEMS							
23	Providing and supplying of sadarahalli grey **granite bollards** of height 0.9 m and width of 0.45m width, cut to required shape including cost of all materials, labour, transportation etc							
	Unit	Nos						
							90.00	Nos
24	Providing and fabricating **Canopy structure** made of MS using tubular Poles/sections of required size as per design approved by Engineer in chief including cost of all materials, labour, transportation etc.							
	Unit	Nos						
	For Seating Shelter						**5.00**	Nos
25	Proving and fixing the **Tensile Membrane** made from Germany make, male mehler, Valmex FR 900 TYPE II, with 100% white colour, PVDF- lacauer on both side, protected against microbial and fungal attack, UV - protected with weight of 900/GSM with 05 Years Warranty Approved by BBMP							
	Unit	Sqm						
	For Seating Shelter		5	60.00		--	300.00	
	Total						**300.00**	Nos
	Civil Sub Total							

TAGORE CIRCLE ELECTRICAL ESTIMATE

SL No	DESCRIPTION		N	L	B	D	Qty	Unit
	POLE LIGHT							
26	Supply and erection of 14 Feet Height Street Light Pole 14 Feet Height Street Light Pole on suitable cement concrete foundation with 2.5 Feet height dia 95 mm cast iron decorative round pedestal as per design weighing not less than 37Kgs, the pedestal shall be fitted with Class 'C' G.I.Pipe 7 Feet height 75 mm outer dia and 7 feet height top pieceouter dia of 65 mm fixed by measure of threading/welding/coupling complete. (excluding foundation).							
							40.00	Nos
	POLE LIGHT FIXTURE							

27	Supply of LED pole mounting type post top lantern with pressure die cast aluminium housing body for optimal thermal dissipation. Lamp compartment comprising of anti glare clear diffuser with Injection moulded polycarbonate/ clear glass material, delivering superior light outputRated life Burning Hrs 50000 hr@ Lumen Maintenance of 70%, CCT > 5500K, IP 66 optical and electrical compartment & impact resistance of complete luminaire >IK08. Power Factor>0.9 with mains, Surge Protection- Min 5KV along with Over voltage/Overload, short circuit/ miss-wiring protection. Compatible for pole mounting with outer dia of 40mm to 50mm. Universal Voltage driver to operate wide voltage range from 100V to 270V 50/60Hz application. Compliance to IS 10322/1 EC 60598, LM 79 & LM 80 Adherence with RoHS. UL approved MCPCB LED Efficiency>1301m/w, nominal CRI >75. Luminaire manufacturer should have in- house facility accredited by NABL/CPRI & any Government certified agency & Design & Development facility certified by ISO 9001:2008. Housing with supplier word mark /name shall be Engraved / Embossing on the die cast housing/ Body part Warranty of 2 Years against anymanufacturing defect working under standard electrical conditions as mentioned above should be given by LED manufacturer & Cree/Nichia/ Lumileds/Osram make LED Source.		
	LED Post Top Lantern with 45 W		
		40.00	Nos
	FIXING CHARGES		
28	Fixing charges of post top/ Gate/ Garden fitting /LED on the existing CI / GI or any other pipe using required size of reducer, wiring using suitable wires		
		40.00	Nos
	CONDUIT & ITS ACCESSORIES		
29	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply, including all CPVC plain & brass threaded fittings, including fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and testing of joints complete as per direction of Engineer in Charge. Internal work - Exposed on wall.50 mm nominal dia Pipes		
	Total	620.00	Mtrs
	L.T. U.G. CABLES		
30	LT UG Cable. Heat shrinkable Straight Through Joint. 2.5 to 25 Sqmm		
		620.00	Mtrs
31	4 Core, 16 Sqmm, 30 No GI Wires (1.6 mm)		
		620.00	Mtrs
32	LABOUR for Aerial Bunched Conductor & Accessories. Stringing of 11 kV grade Aerial Bunched 3 Core cable of XLPE insulation of size 3x95 Sqmm + 1x70 Sqmm with Insulated Messenger Wire		
		1240.00	Mtrs
33	Digging of Pit 1.8 Mtr depth for errection of 9 to 10 Mtr Long Steel/RCC/PSCC supports as per approved Drawing.		
	Hard Rock (By Chizling and/Or Wedging)		
		20.00	Mtrs

	WIRES & CABLES		
34	Supplying and drawing Flexible Multicore Cable manufactured with electrolytic grade flexible copper with low conductor confirming to IS:8130-1984 and (Virgin) PVC insulation sheathed suitable for working voltage upto 1100Volts as per IS-694:1990		
	3C X 4Sq.mm Copper Flexible		
		620.00	Mtrs
35	Supplying fixing and wiring earth electrode for grounding of lifts, transformers, DG sets etc. using 40 mm dia 2.9 mm thick 2.5m long GI pipe with GI funnel with mesh and suitable size reducer fixed on the top of the earth electrode.The funnel should be enclosed in a CC chamber of 400x400x400 mm with a cast iron cover. The earth electrode shall have staggered holes of 12 mm dia and the electrode should be covered 150 mm all-round with alternate layers of salt and charcoal from the bottom of the CC chamber. The connection from the electrode is to be established through GI strip using GI bolts and nuts.		
	8 SWG GI Wire		
		80.00	Mtrs
36	Supplying and running of GI/Copper strips for grounding connections, using necessary fixing materials as required.		
	25mm x 3mm GI Patti		
		50.00	Rmt
37	Supplying and drawing 3 core flat PVC sheathed submersible pump cable manufactured with electrolytic grade copper with flexible copper with low resistance conductor confirming to IS:8130-1984 and virgin grade PVC insulation and powder coating extruded PVC sheathed suitable for working voltage upto 1100Volts as per IS-694:1990.		
	Submersible Flat Cable 3C X 4 sqm		
		110.00	Rmt
	CONTROL PANEL		
38	Supplying and fixing Moulded Case Circuit Breaker (MCCB) over the existing wood/panel board using necessary screws, bolts, nuts, necessary phase separators, handle and wiring complete. Protection of Overload and Short circuit with thermal Magnetic/Micro processor release and Earth Fault as per IS 13947. (Icu = Ics)		
	THREE POLE		
	200Amps 36kA.		
		1.00	EACH
39	Supplying and fixing miniature circuit breakers on existing MCB distribution boards using necessary fixing materials and 'C' Type curve, indicator ON/OFF, energy cross-3 with Short circuit breaking capacity of 10K and complete wiring as required confirming to IEC 60898.		
	6-32Amps TPN		
		2.00	EACH
40	Supplying fully automatic star-delta starter Unit push button type with suitable wires, 3 contactors, one adjustable thermal timer mounted on a common base plate held in steel enclosure for use on 400/440 volts 3 phase and wired after fixing to the existing wooden board for motor		

	Upto 12.5 HP		
		2.00	EACH
41	For Distribution Transformer Centre (DTC) MS Box for housing the ETV Meter 3 Phase 4 Wire 5 Amps, with associated LT CT 0.5 Accuracy Class, ring type, with wiring Clamps, B&N and all other accessories required. (EXCLUDING ETV METER) With CT Ratio 800/5 for 500 kVA DTC		
		2.00	EACH
42	Supplying and fixing of Modular MCB Devices (Tripper) With Breaking capacity of 6kA.		
	16 - 32 A SP		
		2.00	EACH
	NON SR ITEMS		
43	Supply and Installation of 50 watt UPLIGHTERS LED light with 2 way connector for each light. Technical Specification • Luminaire made up of die cast dark grey powder coated aluminium alloy with non corrosive SS fasteners with low copper content. • Luminaire prewired with LED driver and Suitable for operation on 240V, 50Hz single phase ac supply. IP67 , mechanical resistance IK08	25.00	EACH
44	Supply and Installation of 10watt focus WALL LED light with 2 way connector for each light. Technical Specification • Luminaire made up of die cast dark grey powder coated aluminium alloy with non corrosive SS fasteners with low copper content. • Luminaire prewired with LED driver and Suitable for operation on 240V, 50Hz single phase ac supply. IP67 , mechanical resistance IK08	25.00	EACH

BRUHAT BANGALORE MAHANAGARA PALIKE

Name of the Work : Improvements to 20 numbers major junctions with greenery to improve air quality around the junction

DAIRY CIRCLE CIVIL WORKS ESTIMATE

SL no	Description of work	Unit	Nos.	Dimension			Quantity	Unit
				Length	Breadth	Depth		
1	**Dismantling of cement concrete pavement** by mechanical means using pneumatic tools, breaking to pieces not exceeding 0.02 m3 in volume and stock piling at designated locations and disposal of dismantled materials and stacking serviceable and unserviceable materials separately.							
	Unit	Cum						
	Footpath Flooring		1	692.00		0.15	103.80	
	Footpath under the flyover		1	510.00		0.15	76.50	
	Total						**180.30**	Cum
2	**Dismantling kerb stone** by manual means and disposal of dismantled material with all lifts							
	Unit	Cum						
	Kerbs		1	586.00		0.15	87.90	
	Total						**87.90**	Cum
3	**Earth work excavation** for Foundation by Mechanical means depth upto 1.50m, as per drawing and technical specifications, including setting out, shoring, strutting, barricading, caution lights, including cost of explosives, dressing of excavated surfaces, disposing off or levelling the excavated stuff or sorting & stacking the selected stuff for reuse in a radius of 50 m and lift upto 1.5 m including cost of labour, blasting materials, tools, usage of Machinery & all other appurtenaces required to complete the work complete.							
	In Hard Rock (requiring blasting) Depth upto 1.50m							
	Unit	Cum						
	For Kerb		1	619.00	0.45	0.30	83.57	
	For seatingwall under flyover		1	48.00	0.60	0.45	12.96	
	For seatingwall in the islands		1	8.00	0.60	0.45	2.16	
	For seatingwall in the islands		1	9.00	0.60	0.45	2.43	
	For seatingwall in the islands		1	14.00	0.60	0.45	3.78	
	For Pole Lights		40.00	0.60	0.60	0.60	8.64	
	Total						**113.54**	Cum
4	Loading and Unloading of Stone Boulder/Stone aggregates/Sand/Kankar/Moorum. (Tipper							
	Unit	Cum						
	Demolished works						**381.74**	
	Total						**381.74**	Cum

5	Providing and laying in position **Cement Concrete** for levelling course for all works in foundation. The granite/trap/basalt crushed graded coarse aggregates and fine aggregates as per relevant IS Codesmachine mixed, laid in layers not exceeding 150 mm thickness, well compacted using plate vibrators, including all lead & lifts, cost of all materials of quality, labour, Usage charges of machinery, curing, and all the other appurtenances required to complete the work as per technical specifications.							
	Mix **1:3:6** Using **20 mm** nominal size graded crushed coarse aggregates							
	Unit	Cum						
	For Kerb		1	619.00	0.45	0.15	41.78	
	For Footpath flooring		1	692.00		0.15	103.80	
	For Island flooring		1	560.00		0.15	84.00	
	For Pole Lights		40.00	0.60	0.60	0.60	8.64	
	Total						**238.22**	Cum

6	Providing, laying, spreading and compacting graded stone aggregate to **wet mix macadam** specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver/grader in sub-base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density. MORTH Specification No. 406							
	Unit	Cum						
	For Kerb		1	619.00	0.45	0.15	41.78	
	For Footpath flooring		1	692.00		0.15	103.80	
	For Island flooring		1	560.00		0.15	84.00	
	For seatingwall under flyover		1	48.00	0.60	0.15	4.32	
	For seatingwall in the islands		1	8.00	0.60	0.15	0.72	
	For seatingwall in the islands		1	9.00	0.60	0.15	0.81	
	For seatingwall in the islands		1	14.00	0.60	0.15	1.26	
	Total						**236.69**	Cum

7	Providing **Coursed rubble masonry** (first sort) with hard stone in foundation and plinth with Cement mortar 1:6 (1 cement : 6 coarse sand).							
	Unit	Cum						
	For seatingwall under flyover		1	48.00	0.60	0.30	8.64	
	For seatingwall in the islands		1	8.00	0.60	0.30	1.44	
	For seatingwall in the islands		1	9.00	0.60	0.30	1.62	
	For seatingwall in the islands		1	14.00	0.60	0.30	2.52	
	Total						**14.22**	Cum
8	Providing **Brick work** with common burnt clay Non Modular bricks of class designation 3.5 in superstructure above plinth level in all shapes and sizes in Cement mortar 1:6 (1 cement : 6 coarse sand) including cost of all materials, labour, scaffolding and usage charges of machinery & other incidental charges complete as per the direction of engineer incharge of work.							
	Unit	Cum						
	For seatingwall under flyover		1	48.00	0.60	0.45	12.96	
	For seatingwall in the islands		1	8.00	0.60	0.45	2.16	
	For seatingwall in the islands		1	9.00	0.60	0.45	2.43	
	For seatingwall in the islands		1	14.00	0.60	0.45	3.78	
	For bridge wall		2	68.00	0.60	0.45	36.72	
	Total						**58.05**	Cum

9	Providing **15 mm cement plaster** on rough side of single or half brick wall finished with a floating coat of neat cement of mix 1:3 (1 cement: 3 fine sand) including rounding off corners wherever required smooth rendering, providing and removing scaffolding, including cost of materials, labour, curing complete as per specifications and as per directions of Engineer-in-charge.							
	Unit	Sqm						
	For seatingwall under flyover		1	48.00	1.65	--	79.20	
	For seatingwall in the islands		1	8.00	1.65	--	13.20	
	For seatingwall in the islands		1	9.00	1.65	--	14.85	
	For seatingwall in the islands		1	14.00	1.65	--	23.10	
	For bridge wall		4	68.00	0.60	--	163.20	
	For bridge wall coping		2	68.00	0.45	--	61.20	
	Total						**354.75**	Sqm
10	Providing and laying **Black Lapotra Granite** stone flooring in linear as well as curvilinear portions of the building all complete as per the architectural drawings with 18mm thick stone slab over 20 mm (average) thick base of cement mortar 1:4 (1 cement : 4 coarse sand) laid and jointed with cement slurry and pointing with white cement slurry admixed with pigment of matching shade including rubbing , curing and polishing etc. all complete as specified and as directed by the Engineer-in-charge.							
	Unit	Sqm						
	For seatingwall under flyover cladding		1	48.00	1.65	--	79.20	
	For seatingwall in the islands cladding		1	8.00	1.65	--	13.20	
	For seatingwall in the islands cladding		1	9.00	1.65	--	14.85	
	For seatingwall in the islands cladding		1	14.00	1.65	--	23.10	
	For bridge wall cladding		2	68.00	0.60	--	81.60	
	For bridge wall coping		2	68.00	0.45	--	61.20	
	Total						**273.15**	Sqm
11	Providing and laying **60mm** thick factory made precast M -30 grade **Cement Concrete Paver Block** as per IRC SP 63:2018 & IS 15658 for Cycle Tracks & Pedestrian Footpaths of approved shape and colour, laid in required pattern and including over 30mm thick compacted bed of coarse sand, filling the joints with fine sand etc. all complete as per the direction of Engineer-in charge. (WMM/WBM Base to be paid separately if necessary as per relevant technical specification).							
	Unit	Sqm						
	For Footpath flooring		1	692.00		--	692.00	
	For Island flooring		1	560.00		--	560.00	
	Total						**1252.00**	Sqm

12	Supplying and fixing M15 grade precast **cement concrete Kerb stone**s for Roadway, Sidewalls and gutters fixed with CM 1:3 fixed and finsihed in line as per direction of Engineer in charge. (The cost of PCC shall be paid extra)							
	600 x 300 x 150 mm size							
	Unit	M						
	For Footpath Kerb		1	619.00	--	--	619.00	
	Total						**619.00**	M

13	Providing and applying tack coat with **RS1 Bituminous Emulsion** using emulsion pressure distributor at the rate of 0.20 kg/m2 on the prepared bituminous surface cleaned with mechanical broom							
	Unit	Sqm						
	For HRPC		4	8.00	8.00	--	256.00	
	Total						**256.00**	Sqm
14	Providing and laying **Bituminous Concrete** with 100 TPH capacity hot mix plant batch type using crushed aggregates of specified grading, premixed with bituminous binder VG-30, @ 5.4 per cent of mix and filler, transporting the hot mix to work site, laying with mechanical paver finisher to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH specification							
	Unit	Cum						
	For HRPC							
	Below Cobble stone							
			4	8.00	3.00	0.05	4.80	
	For Slopes							
			8	8.00	3.00	0.19	36.00	
						0.5 x 2.5 x 0.15		
	Total						**40.80**	Cum
15	Providing and laying 100mm thick factory made **precast M - 40 grade Cement Concrete Paver Block** as per IRC SP 63:2018 & IS 15658 for Commercial Traffic Axle load repetitions more than 10MSA upto 20MSA for Industrial Streets, Bus & Truck parking of approved shape and colour, laid in required pattern an including over 40mm thick compacted bed of coarse sand, filling the joints with fine sand etc. all complete as per the direction of Engineer-							
	Unit	Sqm						
	For HRPC		4	8.00	3.00	--	96.00	
	Total						**96.00**	Sqm

16	Providing and laying of **hot applied thermoplastic compound** 2.5 mm thick including reflectorising glass beads @ 250 g/m2 area, thickness of 2.5 mm is exclusive of surface applied glass beads as per IRC:35:2015.The finished surface to be level, uniform and free from streaks and holes.							
	Unit	Sqm						
	For HRPC Slopes		8	2.50	0.50	--	10.00	
	For Stop Lane		20	7.00	0.25	--	35.00	
	Zebra Crossings		90	4.00	0.50	--	180.00	
	Lanes		1	180.00	0.25	--	45.00	
	End Lane		1	1130.00	0.25	--	282.50	
	Divider lane		1	965.00	0.25	--	241.25	
	For pattern on the road center		1	1170.00		--	585.00	
	Total						**1378.75**	Sqm
17	Supplying and Fixing of **Molded Shank Raised Pavement Markers / Cat's Eye** made of polycarbonate and ABS moulded body and reflective panels with micro prismatic lens capable of providing total internal reflection of the light entering the lens face and shall support a load of 16000 kg tested in accordance to ASTM D 4280 Type H and complying to Specifications of Category A of MORTH Circular No RW/NH/33023/10-97 DO III Dt 11.06. 1997. The height, width and length shall not exceed 50 mm, 100 mm and 102 +/- 2 mm and with minimum reflective area of 13 cm2 on each side and the slope to the base shall be 35 +/- 5 degree. The strength of detachment of the integrated cylindrical shanks, (of diameter not less than 19 +/- 2 mm and height not less than 30+/- 2 mm) from the body is to be a minimum value of 500 Kg. Fixing will be by drilling holes on the road for the shanks to go inside, without nails and using epoxy resin based adhesive as per manufacturer's recommendation and complete as directed by the engineer.The contractor shall submit a two year warranty for satisfactory field performance including stipulated retro-reflectance of the reflecting panel, to the Engineer.							
	Unit	Sqm						
	Roads		230	--	--	--	230.00	
	Total						**230.00**	Sqm
18	**Retro-Reflectorised Traffic Signs** - Providing and fixing of retro- reflectorised cautionary, mandatory and informatory sign as per IRC:67:2022 made of Class C Type XI retro reflective sheeting fixed over 2 mm thick aluminium sheeting vide clause 801.3, 3mm/4mm thick Aluminium composite material sheet depending on the size of the sign fixed over the back support frame of min 25 x 25 x 3mm angle mounted on a mild steel circular pipe 65 NB, 3.2 mm thickness firmly fixed to the ground by means of properly designed foundation with M25 grade cement concrete 45 cm x 45 cm x 60 cm, 60 cm below ground level as per approved drawing.The sign shall be maintained as per section 12 of IRC:67:2022. **90 cm equilateral triangle**							
	Unit	Sqm						
	Roads		60	--	--	--	60.00	
	Total						**60.00**	Sqm
19	**Road Delineators** - Supplying and installation of delineators (road way indicators, hazard markers, object markers), 80-100 cm high above ground level, painted black and white in 15 cm wide strips, fitted with 80 x 100 mm rectangular or 75 mm dia circular reflectorised panels at the top, buried or pressed into the ground and conforming to IRC-79-2019 and the							
	Unit	Each						
	Roads		50	--	--	--	50.00	
	Total						**50.00**	Each

20	**Chevron Boards -** Supply and installation of retro- reflective **Chevron signboards of 600x450mm** made out of cube corner micro prismatic grade sheeting confirming to Type XI standards of IRC:67:2022 & ASTM D 4956-09 specification & fixed over 3 mm thick Aluminium Composite Panel sheet having minimum 0.30 mm thick aluminum skin on both sides & fixed over back support frame of 25x25x 3mm MS angle frame. Supported on 75 mm dia OR 75x75x6mm Mild steel with clear height of not less than 2.1 m from the ground level to the bottom of the Sign board & 60 cm below ground level. The sign post should be painted with one coat of red oxide paint and two coats of synthetic enamel paint of black and white colour with bands of 30 cm height, firmly fixed to the ground by means of foundation with M 20 grade cement, concrete foundation size of 45 cm x 45 cm x 60 cm including cost & conveyance of all materials, equipment, machinery & Labour with all leads and lifts for satisfactory completion of the work as directed by Engineer incharge.							
	Unit	No						
	Roads		20	--	--	--	20.00	
	Total						**20.00**	No
21	**Tubular Marker / Spring post 700 mm (Flexible Bollards)** - Providing Tubular marker made up of Polyurethane used to divide opposing lanes of road users shall be fixible in nature. Tubular marker having height 700 mm shall be having 75 mm Reboundable work zone retroreflective sheeting as per ASTM 4956 S2 (Application of Tubular Marker shall be done as per IRC:SP 55:2014)							
	Unit	No						
	Roads		40	--	--	--	40.00	
	Total						**40.00**	No
	NON SR ITEMS							
22	Providing and supplying of sadarahalli grey **granite bollards** of height 0.9 m and width of 0.45m width, cut to required shape including cost of all materials, labour, transportation etc							
	Unit	Nos						
							90.00	Nos
	Civil Sub Total							

DAIRY CIRCLE ELECTRICAL ESTIMATE

SL No	DESCRIPTION		N	L	B	D	Qty	Unit
	POLE LIGHT							
23	Supply and erection of 14 Feet Height Street Light Pole 14 Feet Height Street Light Pole on suitable cement concrete foundation with 2.5 Feet height dia 95 mm cast iron decorative round pedestal as per design weighing not less than 37Kgs, the pedestal shall be fitted with Class 'C' G.I.Pipe 7 Feet height 75 mm outer dia and 7 feet height top pieceouter dia of 65 mm fixed by measure of threading/welding/coupling complete. (excluding foundation).							
							40.00	Nos
	POLE LIGHT FIXTURE							
24	Supply of LED pole mounting type post top lantern with pressure die cast aluminium housing body for optimal thermal dissipation. Lamp compartment comprising of anti glare clear diffuser with Injection moulded polycarbonate/ clear glass material, delivering superior light outputRated life Burning Hrs 50000 hr@ Lumen Maintenance of 70%, CCT > 5500K, IP 66 optical and electrical compartment & impact resistance of complete luminaire >IK08. Power Factor>0.9 with mains, Surge Protection- Min 5KV along with Over voltage/Overload, short circuit/ miss-wiring protection. Compatible for pole mounting with outer dia of 40mm to 50mm. Universal Voltage driver to operate wide voltage range from 100V to 270V 50/60Hz application. Compliance to IS 10322/1 EC 60598, LM 79 & LM 80 Adherence with RoHS. UL approved MCPCB LED Efficiency>1301m/w, nominal CRI >75. Luminaire manufacturer should have in- house facility accredited by NABL/CPRI & any Government certified agency & Design & Development facility certified by ISO 9001:2008. Housing with supplier word mark /name shall be Engraved / Embossing on the die cast							
	LED Post Top Lantern with 45 W							
							40.00	Nos

	FIXING CHARGES							
25	Fixing charges of post top/ Gate/ Garden fitting /LED on the existing CI / GI or any other pipe using required size of reducer, wiring using suitable wires							
							40.00	Nos
	CONDUIT & ITS ACCESSORIES							
26	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply, including all CPVC plain & brass threaded fittings, including fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and testing of joints complete as per direction of Engineer in Charge. Internal work - Exposed on wall.50 mm nominal dia Pipes							
	Basic Rate	₹ 217.00						
	Area weightage (6%) (₹)	₹ 13.02						
		₹ 230.02						
	Total						620.00	Mtrs
	L.T. U.G. CABLES							
27	LT UG Cable. Heat shrinkable Straight Through Joint. 2.5 to 25 Sqmm							
							620.00	Mtrs
28	4 Core, 16 Sqmm, 30 No GI Wires (1.6 mm)							
							620.00	Mtrs
29	LABOUR for Aerial Bunched Conductor & Accessories. Stringing of 11 kV grade Aerial Bunched 3 Core cable of XLPE insulation of size 3x95 Sqmm + 1x70 Sqmm with Insulated							
							1240.00	Mtrs
30	Digging of Pit 1.8 Mtr depth for errection of 9 to 10 Mtr Long Steel/RCC/PSCC supports as per approved Drawing.							
	Hard Rock (By Chizling and/Or Wedging)							
							20.00	Mtrs
	WIRES & CABLES							
31	Supplying and drawing Flexible Multicore Cable manufactured with electrolytic grade flexible copper with low conductor confirming to IS:8130-1984 and (Virgin) PVC insulation sheathed suitable for working voltage upto 1100Volts as per IS-694:1990							
	3C X 4Sq.mm Copper Flexible							
							620.00	Mtrs

32	Supplying fixing and wiring earth electrode for grounding of lifts, transformers, DG sets etc. using 40 mm dia 2.9 mm thick 2.5m long GI pipe with GI funnel with mesh and suitable size reducer fixed on the top of the earth electrode.The funnel should be enclosed in a CC chamber of 400x400x400 mm with a cast iron cover. The earth electrode shall have staggered holes of 12 mm dia and the electrode should be covered 150 mm all-round with alternate layers of salt and charcoal from the bottom of the CC chamber. The connection from the		
	8 SWG GI Wire		
		80.00	Mtrs
33	Supplying and running of GI/Copper strips for grounding connections, using necessary fixing materials as required.		
	25mm x 3mm GI Patti		
		50.00	Rmt
34	Supplying and drawing 3 core flat PVC sheathed submersible pump cable manufactured with electrolytic grade copper with flexible copper with low resistance conductor confirming to IS:8130-1984 and virgin grade PVC insulation and powder coating extruded PVC sheathed suitable for working voltage upto 1100Volts as per IS-694:1990.		
	Submersible Flat Cable 3C X 4 sqm		
		110.00	Rmt
	CONTROL PANEL		
35	Supplying and fixing Moulded Case Circuit Breaker (MCCB) over the existing wood/panel board using necessary screws, bolts, nuts, necessary phase separators, handle and wiring complete. Protection of Overload and Short circuit with thermal Magnetic/Micro processor release and Earth Fault as per IS 13947. (Icu = Ics)		
	THREE POLE		
	200Amps 36kA.		
		1.00	EACH
36	Supplying and fixing miniature circuit breakers on existing MCB distribution boards using necessary fixing materials and 'C' Type curve, indicator ON/OFF, energy cross-3 with Short circuit breaking capacity of 10K and complete wiring as required confirming to IEC 60898.		
	6-32Amps TPN		
		2.00	EACH
37	Supplying fully automatic star-delta starter Unit push button type with suitable wires, 3 contactors, one adjustable thermal timer mounted on a common base plate held in steel enclosure for use on 400/440 volts 3 phase and wired after fixing to the existing wooden		
	Upto 12.5 HP		
		2.00	EACH

38	For Distribution Transformer Centre (DTC) MS Box for housing the ETV Meter 3 Phase 4 Wire 5 Amps, with associated LT CT 0.5 Accuracy Class, ring type, with wiring Clamps, B&N and all other accessories required. (EXCLUDING ETV METER) With CT Ratio 800/5 for 500 kVA DTC		
		2.00	EACH
39	Supplying and fixing of Modular MCB Devices (Tripper) With Breaking capacity of 6kA.		
	16 - 32 A SP		
		2.00	EACH
	NON SR ITEMS		
40	Supply and Installation of 50 watt UPLIGHTERS LED light with 2 way connector for each light. Technical Specification • Luminaire made up of die cast dark grey powder coated aluminium alloy with non corrosive SS fasteners with low copper content. • Luminaire prewired with LED driver and Suitable for operation on 240V, 50Hz single phase ac supply. IP67 , mechanical resistance IK08	25.00	EACH
	Approved rate		
41	Supply and Installation of 10watt focus WALL LED light with 2 way connector for each light. Technical Specification • Luminaire made up of die cast dark grey powder coated aluminium alloy with non corrosive SS fasteners with low copper content. • Luminaire prewired with LED driver and Suitable for operation on 240V, 50Hz single phase ac supply. IP67 , mechanical resistance IK08	25.00	EACH
	Approved rate		

BRUHAT BANGALORE MAHANAGARA PALIKE

Name of the Work : Improvements to 20 numbers major junctions with greenery to improve air quality around the junction

TC PALYA JUNCTION - NH75 CIVIL WORKS ESTIMATE

SL no	Description of work	Unit	Nos.	Dimension			Quantity	Unit
				Length	Breadth	Depth		
1	**Dismantling of cement concrete pavement** by mechanical means using pneumatic tools, breaking to pieces not exceeding 0.02 m3 in volume and stock piling at designated locations and disposal of dismantled materials and stacking serviceable and unserviceable materials separately.							
	Unit	Cum						
	Footpath Flooring		1	371.00		0.15	55.65	
	Total						**55.65**	Cum
2	**Dismantling kerb stone** by manual means and disposal of dismantled material with all lifts and lead							
	Unit	Cum						
	Kerbs		1	119.00		0.15	17.85	
	Total						**17.85**	Cum
3	**Earth work excavation** for Foundation by Mechanical means depth upto 1.50m, as per drawing and technical specifications, including setting out, shoring, strutting, barricading, caution lights, including cost of explosives, dressing of excavated surfaces, disposing off or levelling the excavated stuff or sorting & stacking the selected stuff for reuse in a radius of 50 m and lift upto 1.5 m including cost of labour, blasting materials, tools, usage of Machinery & all other appurtenaces required to complete the work complete.							
	In Hard Rock (requiring blasting) Depth upto 1.50m							
	Unit	Cum						
	For Footpath Kerb		1	180.00	0.45	0.30	24.30	
	For Island Kerb		1	60.00	0.45	0.30	8.10	
	For Median Kerb		1	160.00	0.45	0.30	21.60	
	For Pole Lights		12.00	0.60	0.60	0.60	2.59	
	Total						**56.59**	Cum
4	Loading and Unloading of Stone Boulder/Stone aggregates/Sand/Kankar/Moorum. (Tipper							
	Unit	Cum						
	Demolished works						**130.09**	
	Total						**130.09**	Cum

5	Providing and laying in position **Cement Concrete** for levelling course for all works in foundation. The granite/trap/basalt crushed graded coarse aggregates and fine aggregates as per relevant IS Codesmachine mixed, laid in layers not exceeding 150 mm thickness, well compacted using plate vibrators, including all lead & lifts, cost of all materials of quality, labour, Usage charges of machinery, curing, and all the other appurtenances required to complete the work as per technical specifications.							
	Mix **1:3:6** Using **20 mm** nominal size graded crushed coarse aggregates							
	Unit	Cum						
	For Footpath Kerb		1	180.00	0.45	0.15	12.15	
	For Island Kerb		1	60.00	0.45	0.15	4.05	
	For Median Kerb		1	160.00	0.45	0.15	10.80	
	For Footpath flooring		1	332.00		0.15	49.80	
	For Pole Lights		12.00	0.60	0.60	0.60	2.59	
	Total						**79.39**	Cum
6	Providing, laying, spreading and compacting graded stone aggregate to **wet mix macadam** specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver/grader in sub-base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density. MORTH Specification No. 406							
	Unit	Cum						
	For Footpath Kerb		1	180.00	0.45	0.15	12.15	
	For Island Kerb		1	60.00	0.45	0.15	4.05	
	For Median Kerb		1	160.00	0.45	0.15	10.80	
	For Footpath flooring		1	332.00		0.15	49.80	
	Total						**76.80**	Cum
7	Providing and laying **60mm** thick factory made precast M -30 grade **Cement Concrete Paver Block** as per IRC SP 63:2018 & IS 15658 for Cycle Tracks & Pedestrian Footpaths of approved shape and colour, laid in required pattern and including over 30mm thick compacted bed of coarse sand, filling the joints with fine sand etc. all complete as per the direction of Engineer-in charge. (WMM/WBM Base to be paid separately if necessary as per relevant technical specification).							
	Unit	Sqm						
	For Footpath flooring		1	332.00		--	332.00	
	Total						**332.00**	Sqm
8	Supplying and fixing M15 grade precast **cement concrete Kerb stone**s for Roadway, Sidewalls and gutters fixed with CM 1:3 fixed and finsihed in line as per direction of Engineer in charge. (The cost of PCC shall be paid extra)							
	600 x 300 x 150 mm size							
	Unit	M						
	For Footpath Kerb		1	180.00	--	--	180.00	
	For Island Kerb		1	60.00	--	--	60.00	

	For Median Kerb		1	160.00	--	--	160.00	
	Total						**240.00**	M
9	Providing and applying tack coat with **RS1 Bituminous Emulsion** using emulsion pressure distributor at the rate of 0.20 kg/m2 on the prepared bituminous surface cleaned with mechanical broom							
	Unit	Sqm						
	For HRPC		1	8.00	8.00	--	64.00	
	Total						**64.00**	Sqm
10	Providing and laying **Bituminous Concrete** with 100 TPH capacity hot mix plant batch type using crushed aggregates of specified grading, premixed with bituminous binder VG-30, @ 5.4 per cent of mix and filler, transporting the hot mix to work site, laying with mechanical paver finisher to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH specification clause No. 507 complete in all respects.							
	Unit	Cum						
	For HRPC							
	Below Cobble stone							
			1	8.00	3.00	0.05	1.20	
	For Slopes							
			2	8.00	3.00	0.19	9.00	
					0.5 x 2.5 x 0.15			
	Total						**10.20**	Cum
11	Providing and laying 100mm thick factory made **precast M - 40 grade Cement Concrete Paver Block** as per IRC SP 63:2018 & IS 15658 for Commercial Traffic Axle load repetitions more than 10MSA upto 20MSA for Industrial Streets, Bus & Truck parking of approved shape and colour, laid in required pattern an including over 40mm thick compacted bed of coarse sand, filling the joints with fine sand etc. all complete as per the direction of Engineer-in-charge.							
	Unit	Sqm						
	For HRPC		1	8.00	3.00	--	24.00	
	Total						**24.00**	Sqm
12	Providing and laying of **hot applied thermoplastic compound** 2.5 mm thick including reflectorising glass beads @ 250 g/m2 area, thickness of 2.5 mm is exclusive of surface applied glass beads as per IRC:35:2015.The finished surface to be level, uniform and free from streaks and holes.							
	Unit	Sqm						
	For HRPC Slopes		2	2.50	0.50	--	2.50	
	For Stop Lane		20	7.00	0.25	--	35.00	
	Zebra Crossings		90	4.00	0.50	--	180.00	

	End Lane		1	982.00	0.25	--	245.50	
	Divider lane		1	631.00	0.25	--	157.75	
	Total						**620.75**	Sqm
13	Supplying and Fixing of **Molded Shank Raised Pavement Markers / Cat's Eye** made of polycarbonate and ABS moulded body and reflective panels with micro prismatic lens capable of providing total internal reflection of the light entering the lens face and shall support a load of 16000 kg tested in accordance to ASTM D 4280 Type H and complying to Specifications of Category A of MORTH Circular No RW/NH/33023/10-97 DO III Dt 11.06. 1997. The height, width and length shall not exceed 50 mm, 100 mm and 102 +/- 2 mm and with minimum reflective area of 13 cm2 on each side and the slope to the base shall be 35 +/- 5 degree. The strength of detachment of the integrated cylindrical shanks, (of diameter not less than 19 +/- 2 mm and height not less than 30+/- 2 mm) from the body is to be a minimum value of 500 Kg. Fixing will be by drilling holes on the road for the shanks to go inside, without nails and using epoxy resin based adhesive as per manufacturer's recommendation and complete as directed by the engineer.The contractor shall submit a two year warranty for satisfactory field performance including stipulated retro-reflectance of the reflecting panel, to the Engineer.							
	Unit	Sqm						
	Roads		230	--	--	--	230.00	
	Total						**230.00**	Sqm
14	**Retro-Reflectorised Traffic Signs** - Providing and fixing of retro- reflectorised cautionary, mandatory and informatory sign as per IRC:67:2022 made of Class C Type XI retro reflective sheeting fixed over 2 mm thick aluminium sheeting vide clause 801.3, 3mm/4mm thick Aluminium composite material sheet depending on the size of the sign fixed over the back support frame of min 25 x 25 x 3mm angle mounted on a mild steel circular pipe 65 NB, 3.2 mm thickness firmly fixed to the ground by means of properly designed foundation with M25 grade cement concrete 45 cm x 45 cm x 60 cm, 60 cm below ground level as per approved drawing.The sign shall be maintained as per section 12 of IRC:67:2022. **90 cm**							
	Unit	Sqm						
	Roads		60	--	--	--	60.00	
	Total						**60.00**	Sqm
15	**Road Delineators** - Supplying and installation of delineators (road way indicators, hazard markers, object markers), 80-100 cm high above ground level, painted black and white in 15 cm wide strips, fitted with 80 x 100 mm rectangular or 75 mm dia circular reflectorised panels at the top, buried or pressed into the ground and conforming to IRC-79-2019 and the drawings.							
	Unit	Each						
	Roads		50	--	--	--	50.00	
	Total						**50.00**	Each

16	**Chevron Boards** - Supply and installation of retro- reflective **Chevron signboards of 600x450mm** made out of cube corner micro prismatic grade sheeting confirming to Type XI standards of IRC:67:2022 & ASTM D 4956-09 specification & fixed over 3 mm thick Aluminium Composite Panel sheet having minimum 0.30 mm thick aluminum skin on both sides & fixed over back support frame of 25x25x 3mm MS angle frame. Supported on 75 mm dia OR 75x75x6mm Mild steel with clear height of not less than 2.1 m from the ground level to the bottom of the Sign board & 60 cm below ground level. The sign post should be painted with one coat of red oxide paint and two coats of synthetic enamel paint of black and white colour with bands of 30 cm height, firmly fixed to the ground by means of foundation with M 20 grade cement, concrete foundation size of 45 cm x 45 cm x 60 cm including cost & conveyance of all materials, equipment, machinery & Labour with all leads and lifts for satisfactory completion of the work as directed by Engineer incharge.							
	Unit	No						
	Roads		20	--	--	--	20.00	
	Total						**20.00**	No
17	**Tubular Marker / Spring post 700 mm (Flexible Bollards)** - Providing Tubular marker made up of Polyurethane used to divide opposing lanes of road users shall be fixible in nature. Tubular marker having height 700 mm shall be having 75 mm Reboundable work zone retroreflective sheeting as per ASTM 4956 S2 (Application of Tubular Marker shall be done as per IRC:SP 55:2014)							
	Unit	No						
	Roads		40	--	--	--	40.00	
	Total						**40.00**	No
	NON SR ITEMS							
18	Providing and supplying of sadarahalli grey **granite bollards** of height 0.9 m and width of 0.45m width, cut to required shape including cost of all materials, labour, transportation etc							
	Unit	Nos						
							60.00	Nos
	Civil Sub Total							

TC PALYA JUNCTION - NH75TC PALYA JUNCTION - NH75 ELECTRICAL ESTIMATE								
SL No	**DESCRIPTION**		**N**	**L**	**B**	**D**	**Qty**	**Unit**
	POLE LIGHT							
19	Supply and erection of 14 Feet Height Street Light Pole 14 Feet Height Street Light Pole on suitable cement concrete foundation with 2.5 Feet height dia 95 mm cast iron decorative round pedestal as per design weighing not less than 37Kgs, the pedestal shall be fitted with Class 'C' G.I.Pipe 7 Feet height 75 mm outer dia and 7 feet height top pieceouter dia of 65 mm fixed by measure of threading/welding/coupling complete. (excluding foundation).							
							12.00	Nos

	POLE LIGHT FIXTURE		
20	Supply of LED pole mounting type post top lantern with pressure die cast aluminium housing body for optimal thermal dissipation. Lamp compartment comprising of anti glare clear diffuser with Injection moulded polycarbonate/ clear glass material, delivering superior light outputRated life Burning Hrs 50000 hr@ Lumen Maintenance of 70%, CCT > 5500K, IP 66 optical and electrical compartment & impact resistance of complete luminaire >IK08. Power Factor>0.9 with mains, Surge Protection- Min 5KV along with Over voltage/Overload, short circuit/ miss-wiring protection. Compatible for pole mounting with outer dia of 40mm to 50mm. Universal Voltage driver to operate wide voltage range from 100V to 270V 50/60Hz application. Compliance to IS 10322/1 EC 60598, LM 79 & LM 80 Adherence with RoHS. UL approved MCPCB LED Efficiency>1301m/w, nominal CRI >75. Luminaire manufacturer should have in- house facility accredited by NABL/CPRI & any Government certified agency & Design & Development facility certified by ISO 9001:2008. Housing with supplier word mark /name shall be Engraved / Embossing on the die cast housing/ Body part Warranty of 2 Years against anymanufacturing defect working under standard electrical conditions as mentioned above should be given by LED manufacturer & Cree/Nichia/ Lumileds/Osram make LED Source.		
	LED Post Top Lantern with 45 W		
		12.00	Nos
	FIXING CHARGES		
21	Fixing charges of post top/ Gate/ Garden fitting /LED on the existing CI / GI or any other pipe using required size of reducer, wiring using suitable wires		
		12.00	Nos
	CONDUIT & ITS ACCESSORIES		
22	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply, including all CPVC plain & brass threaded fittings, including fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and testing of joints complete as per direction of Engineer in Charge. Internal work - Exposed on wall.50 mm nominal dia Pipes		
	Total	620.00	Mtrs
	L.T. U.G. CABLES		
23	LT UG Cable. Heat shrinkable Straight Through Joint. 2.5 to 25 Sqmm		
		620.00	Mtrs
24	4 Core, 16 Sqmm, 30 No GI Wires (1.6 mm)		
		620.00	Mtrs
25	LABOUR for Aerial Bunched Conductor & Accessories. Stringing of 11 kV grade Aerial Bunched 3 Core cable of XLPE insulation of size 3x95 Sqmm + 1x70 Sqmm with Insulated Messenger Wire		
		1240.00	Mtrs
26	Digging of Pit 1.8 Mtr depth for errection of 9 to 10 Mtr Long Steel/RCC/PSCC supports as per approved Drawing.		

	Hard Rock (By Chizling and/Or Wedging)		
		20.00	Mtrs
	WIRES & CABLES		
27	Supplying and drawing Flexible Multicore Cable manufactured with electrolytic grade flexible copper with low conductor confirming to IS:8130-1984 and (Virgin) PVC insulation sheathed suitable for working voltage upto 1100Volts as per IS-694:1990		
	3C X 4Sq.mm Copper Flexible		
		620.00	Mtrs
28	Supplying fixing and wiring earth electrode for grounding of lifts, transformers, DG sets etc. using 40 mm dia 2.9 mm thick 2.5m long GI pipe with GI funnel with mesh and suitable size reducer fixed on the top of the earth electrode.The funnel should be enclosed in a CC chamber of 400x400x400 mm with a cast iron cover. The earth electrode shall have staggered holes of 12 mm dia and the electrode should be covered 150 mm all-round with alternate layers of salt and charcoal from the bottom of the CC chamber. The connection from the		
	8 SWG GI Wire		
		24.00	Mtrs
29	Supplying and running of GI/Copper strips for grounding connections, using necessary fixing materials as required.		
	25mm x 3mm GI Patti		
		50.00	Rmt
30	Supplying and drawing 3 core flat PVC sheathed submersible pump cable manufactured with electrolytic grade copper with flexible copper with low resistance conductor confirming to IS:8130-1984 and virgin grade PVC insulation and powder coating extruded PVC sheathed suitable for working voltage upto 1100Volts as per IS-694:1990.		
	Submersible Flat Cable 3C X 4 sqm		
		110.00	Rmt
	CONTROL PANEL		
31	Supplying and fixing Moulded Case Circuit Breaker (MCCB) over the existing wood/panel board using necessary screws, bolts, nuts, necessary phase separators, handle and wiring complete. Protection of Overload and Short circuit with thermal Magnetic/Micro processor release and Earth Fault as per IS 13947. (Icu = Ics)		
	THREE POLE		
	200Amps 36kA.		
		1.00	EACH
32	Supplying and fixing miniature circuit breakers on existing MCB distribution boards using necessary fixing materials and 'C' Type curve, indicator ON/OFF, energy cross-3 with Short circuit breaking capacity of 10K and complete wiring as required confirming to IEC 60898.		
	6-32Amps TPN		
		2.00	EACH

33	Supplying fully automatic star-delta starter Unit push button type with suitable wires, 3 contactors, one adjustable thermal timer mounted on a common base plate held in steel enclosure for use on 400/440 volts 3 phase and wired after fixing to the existing wooden board for motor		
	Upto 12.5 HP		
		2.00	EACH
34	For Distribution Transformer Centre (DTC) MS Box for housing the ETV Meter 3 Phase 4 Wire 5 Amps, with associated LT CT 0.5 Accuracy Class, ring type, with wiring Clamps, B&N and all other accessories required. (EXCLUDING ETV METER) With CT Ratio 800/5 for 500 kVA DTC		
		2.00	EACH
35	Supplying and fixing of Modular MCB Devices (Tripper) With Breaking capacity of 6kA.		
	16 - 32 A SP		
		2.00	EACH

Name of the Work : Improvements to 20 numbers major junctions with greenery to improve air quality around the junction

JEDI MARA JUNCTION CIVIL WORKS ESTIMATE

SL no	Description of work	Unit	Nos.	Dimension			Quantity	Unit
				Length	Breadth	Depth		
1	**Dismantling of cement concrete pavement** by mechanical means using pneumatic tools, breaking to pieces not exceeding 0.02 m3 in volume and stock piling at designated locations and disposal of dismantled materials and stacking serviceable and unserviceable materials separately.							
	Unit	Cum						
	Footpath Flooring		1	416.00		0.15	62.40	
	Total						**62.40**	Cum
2	**Dismantling kerb stone** by manual means and disposal of dismantled material with all lifts and							
	Unit	M						
	Kerbs		1	183.00			183.00	
	Total						**183.00**	Cum
3	**Earth work excavation** for Foundation by Mechanical means depth upto 1.50m, as per drawing and technical specifications, including setting out, shoring, strutting, barricading, caution lights, including cost of explosives, dressing of excavated surfaces, disposing off or levelling the excavated stuff or sorting & stacking the selected stuff for reuse in a radius of 50 m and lift upto 1.5 m including cost of labour, blasting materials, tools, usage of Machinery & all other appurtenaces required to complete the work complete.							
	In Hard Rock (requiring blasting) Depth upto 1.50m							
	Unit	Cum						
	For Footpath Kerb		1	180.00	0.45	0.30	24.30	
	For Island Kerb		1	336.00	0.45	0.30	45.36	
	For Pole Lights		12.00	0.60	0.60	0.60	2.59	
	Total						**72.25**	Cum
4	Loading and Unloading of Stone Boulder/Stone aggregates/Sand/Kankar/Moorum. (Tipper 5.5							
	Unit	Cum						
	Demolished works						**317.65**	
	Total						**317.65**	Cum
5	Providing and laying in position **Cement Concrete** for levelling course for all works in foundation. The granite/trap/basalt crushed graded coarse aggregates and fine aggregates as per relevant IS Codesmachine mixed, laid in layers not exceeding 150 mm thickness, well compacted using plate vibrators, including all lead & lifts, cost of all materials of quality, labour, Usage charges of machinery, curing, and all the other appurtenances required to complete the work as per technical specifications.							
	Mix **1:3:6** Using **20 mm** nominal size graded crushed coarse aggregates							
	Unit	Cum						

	For Footpath Kerb		1	180.00	0.45	0.15	12.15	
	For Island Kerb		1	336.00	0.45	0.15	22.68	
	For Footpath flooring		1	211.00		0.15	31.65	
	For Island flooring		1	446.00		0.15	66.90	
	For Parking flooring		1	120.00		0.15	18.00	
	For Pole Lights		12.00	0.60	0.60	0.60	2.59	
	Total						**153.97**	Cum
6	Providing, laying, spreading and compacting graded stone aggregate to **wet mix macadam** specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver/grader in sub-base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density. MORTH Specification No. 406							
	Unit	Cum						
	For Footpath Kerb		1	180.00	0.45	0.15	12.15	
	For Island Kerb		1	336.00	0.45	0.15	22.68	
	For Footpath flooring		1	211.00		0.15	31.65	
	For Island flooring		1	446.00		0.15	66.90	
	For Parking flooring		1	120.00		0.15	18.00	
	Total						**151.38**	Cum
7	Providing and laying **60mm** thick factory made precast M -30 grade **Cement Concrete Paver Block** as per IRC SP 63:2018 & IS 15658 for Cycle Tracks & Pedestrian Footpaths of approved shape and colour, laid in required pattern and including over 30mm thick compacted bed of coarse sand, filling the joints with fine sand etc. all complete as per the direction of Engineer-in charge. (WMM/WBM Base to be paid separately if necessary as per relevant technical							
	Mix **1:3:6** Using **20 mm** nominal size graded crushed coarse aggregates							
	Unit	Sqm						
	For Footpath flooring		1	211.00		--	211.00	
	For Island flooring		1	446.00		--	446.00	
	Total						**657.00**	Sqm
8	Providing and laying **100mm** thick factory made precast M -40 grade **Cement Concrete Paver Block** as per IRC SP 63:2018 & IS 15658 for Commercial Traffic Axle load repetitions more than 20MSA upto 50MSA & for Arterial streets of approved shape and colour, laid in required pattern and including over 40mm thick compacted bed of coarse sand, filling the joints with fine sand etc. all complete as per the direction of Engineer-in-charge.(WMM/WBM Base , DLC to be paid separately as per relevant technical specification).							
	Unit	Sqm						
	For Parking flooring		1	120.00		--	120.00	
	Total						**120.00**	Sqm
9	Supplying and fixing M15 grade precast **cement concrete Kerb stone**s for Roadway, Sidewalls and gutters fixed with CM 1:3 fixed and finsihed in line as per direction of Engineer in charge. (The cost of PCC shall be paid extra)							

	600 x 300 x 150 mm size							
	Unit	M						
	For Footpath Kerb		1	180.00	--	--	180.00	
	For Island Kerb		1	336.00	--	--	336.00	
	Total						**516.00**	M
10	Providing and laying of **hot applied thermoplastic compound** 2.5 mm thick including reflectorising glass beads @ 250 g/m2 area, thickness of 2.5 mm is exclusive of surface applied glass beads as per IRC:35:2015.The finished surface to be level, uniform and free from streaks and							
	Unit	Sqm						
	For Stop Lane		20	7.00	0.25	--	35.00	
	Zebra Crossings		90	4.00	0.50	--	180.00	
	End Lane		1	1255.00	0.25	--	313.75	
	Divider lane		1	989.00	0.25	--	247.25	
	Patterns		1	494.00		--	494.00	
	Total						**1270.00**	Sqm
11	Supplying and Fixing of **Molded Shank Raised Pavement Markers / Cat's Eye** made of polycarbonate and ABS moulded body and reflective panels with micro prismatic lens capable of providing total internal reflection of the light entering the lens face and shall support a load of 16000 kg tested in accordance to ASTM D 4280 Type H and complying to Specifications of Category A of MORTH Circular No RW/NH/33023/10-97 DO III Dt 11.06. 1997. The height, width and length shall not exceed 50 mm, 100 mm and 102 +/- 2 mm and with minimum reflective area of 13 cm2 on each side and the slope to the base shall be 35 +/- 5 degree. The strength of detachment of the integrated cylindrical shanks, (of diameter not less than 19 +/- 2 mm and height not less than 30+/- 2 mm) from the body is to be a minimum value of 500 Kg. Fixing will be by drilling holes on the road for the shanks to go inside, without nails and using epoxy resin based adhesive as per manufacturer's recommendation and complete as directed by the engineer.The contractor shall submit a two year warranty for satisfactory field performance including stipulated retro-reflectance of the reflecting panel, to the Engineer.							
	Unit	Sqm						
	Roads		230	--	--	--	230.00	
	Total						**230.00**	Sqm
12	**Retro-Reflectorised Traffic Signs** - Providing and fixing of retro- reflectorised cautionary, mandatory and informatory sign as per IRC:67:2022 made of Class C Type XI retro reflective sheeting fixed over 2 mm thick aluminium sheeting vide clause 801.3, 3mm/4mm thick Aluminium composite material sheet depending on the size of the sign fixed over the back support frame of min 25 x 25 x 3mm angle mounted on a mild steel circular pipe 65 NB, 3.2 mm thickness firmly fixed to the ground by means of properly designed foundation with M25 grade cement concrete 45 cm x 45 cm x 60 cm, 60 cm below ground level as per approved drawing.The sign shall be maintained as per section 12 of IRC:67:2022. **90 cm equilateral triangle**							
	Unit	Sqm						
	Roads		60	--	--	--	60.00	

	Total						**60.00**	Sqm

13	**Road Delineators** - Supplying and installation of delineators (road way indicators, hazard markers, object markers), 80-100 cm high above ground level, painted black and white in 15 cm wide strips, fitted with 80 x 100 mm rectangular or 75 mm dia circular reflectorised panels at the top, buried or pressed into the ground and conforming to IRC-79-2019 and the drawings.							
	Unit	Each						
	Roads		50	--	--	--	50.00	
	Total						**50.00**	Each
14	**Chevron Boards** - Supply and installation of retro- reflective **Chevron signboards of 600x450mm** made out of cube corner micro prismatic grade sheeting confirming to Type XI standards of IRC:67:2022 & ASTM D 4956-09 specification & fixed over 3 mm thick Aluminium Composite Panel sheet having minimum 0.30 mm thick aluminum skin on both sides & fixed over back support frame of 25x25x 3mm MS angle frame. Supported on 75 mm dia OR 75x75x6mm Mild steel with clear height of not less than 2.1 m from the ground level to the bottom of the Sign board & 60 cm below ground level. The sign post should be painted with one coat of red oxide paint and two coats of synthetic enamel paint of black and white colour with bands of 30 cm height, firmly fixed to the ground by means of foundation with M 20 grade cement, concrete foundation size of 45 cm x 45 cm x 60 cm including cost & conveyance of all materials, equipment, machinery & Labour with all leads and lifts for satisfactory completion of the work as directed by Engineer incharge							
	Unit	No						
	Roads		20	--	--	--	20.00	
	Total						**20.00**	No
15	**Tubular Marker / Spring post 700 mm (Flexible Bollards)** - Providing Tubular marker made up of Polyurethane used to divide opposing lanes of road users shall be fixible in nature. Tubular marker having height 700 mm shall be having 75 mm Reboundable work zone retroreflective sheeting as per ASTM 4956 S2 (Application of Tubular Marker shall be done as per IRC:SP 55:2014)							
	Unit	No						
	Roads		40	--	--	--	40.00	
	Total						**40.00**	No
	NON SR ITEMS							
16	Contructing seating of width 0.6m as per Unit drawings and design including back rest and all finishes as suggested by landscape architect.(Size 2.4m x 0.6m)							
	Unit	Nos						
							8.00	Nos
17	Providing and supplying of sadarahalli grey **granite bollards** of height 0.9 m and width of 0.45m width, cut to required shape including cost of all materials, labour, transportation etc							
	Unit	Nos						

							40.00	Nos
	Civil Sub Total							
	JEDI MARA JUNCTION ELECTRICAL ESTIMATE							
SL No	**DESCRIPTION**		**N**	**L**	**B**	**D**	**Qty**	**Unit**
	POLE LIGHT							
18	Supply and erection of 14 Feet Height Street Light Pole 14 Feet Height Street Light Pole on suitable cement concrete foundation with 2.5 Feet height dia 95 mm cast iron decorative round pedestal as per design weighing not less than 37Kgs, the pedestal shall be fitted with Class 'C' G.I.Pipe 7 Feet height 75 mm outer dia and 7 feet height top pieceouter dia of 65 mm fixed by measure of threading/welding/coupling complete. (excluding foundation).							
							12.00	Nos
	POLE LIGHT FIXTURE							
19	Supply of LED pole mounting type post top lantern with pressure die cast aluminium housing body for optimal thermal dissipation. Lamp compartment comprising of anti glare clear diffuser with Injection moulded polycarbonate/ clear glass material, delivering superior light outputRated life Burning Hrs 50000 hr@ Lumen Maintenance of 70%, CCT > 5500K, IP 66 optical and electrical compartment & impact resistance of complete luminaire >IK08. Power Factor>0.9 with mains, Surge Protection- Min 5KV along with Over voltage/Overload, short circuit/ miss-wiring protection. Compatible for pole mounting with outer dia of 40mm to 50mm. Universal Voltage driver to operate wide voltage range from 100V to 270V 50/60Hz application. Compliance to IS 10322/1 EC 60598, LM 79 & LM 80 Adherence with RoHS. UL approved MCPCB LED Efficiency>1301m/w, nominal CRI >75. Luminaire manufacturer should have in-house facility accredited by NABL/CPRI & any Government certified agency & Design & Development facility certified by ISO 9001:2008. Housing with supplier word mark /name shall be Engraved / Embossing on the die cast housing/ Body part Warranty of 2 Years against anymanufacturing defect working under standard electrical conditions as mentioned above should be given by LED manufacturer & Cree/Nichia/ Lumileds/Osram make LED Source.							
	LED Post Top Lantern with 45 W							
							12.00	Nos
	FIXING CHARGES							
20	Fixing charges of post top/ Gate/ Garden fitting /LED on the existing CI / GI or any other pipe using required size of reducer, wiring using suitable wires							
							12.00	Nos
	CONDUIT & ITS ACCESSORIES							
21	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply, including all CPVC plain & brass threaded fittings, including fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and testing of joints complete as per direction of Engineer in Charge. Internal work - Exposed on wall.50 mm nominal dia Pipes							
	Total						620.00	Mtrs
	L.T. U.G. CABLES							
22	LT UG Cable. Heat shrinkable Straight Through Joint. 2.5 to 25 Sqmm							
							620.00	Mtrs

23	4 Core, 16 Sqmm, 30 No GI Wires (1.6 mm)		
		620.00	Mtrs
24	LABOUR for Aerial Bunched Conductor & Accessories. Stringing of 11 kV grade Aerial Bunched 3 Core cable of XLPE insulation of size 3x95 Sqmm + 1x70 Sqmm with Insulated Messenger Wire		
		1240.00	Mtrs
25	Digging of Pit 1.8 Mtr depth for errection of 9 to 10 Mtr Long Steel/RCC/PSCC supports as per approved Drawing.		
	Hard Rock (By Chizling and/Or Wedging)		
		20.00	Mtrs
	WIRES & CABLES		
26	Supplying and drawing Flexible Multicore Cable manufactured with electrolytic grade flexible copper with low conductor confirming to IS:8130-1984 and (Virgin) PVC insulation sheathed suitable for working voltage upto 1100Volts as per IS-694:1990		
	3C X 4Sq.mm Copper Flexible		
		620.00	Mtrs

27	Supplying fixing and wiring earth electrode for grounding of lifts, transformers, DG sets etc. using 40 mm dia 2.9 mm thick 2.5m long GI pipe with GI funnel with mesh and suitable size reducer fixed on the top of the earth electrode.The funnel should be enclosed in a CC chamber of 400x400x400 mm with a cast iron cover. The earth electrode shall have staggered holes of 12 mm dia and the electrode should be covered 150 mm all-round with alternate layers of salt and charcoal from the bottom of the CC chamber. The connection from the electrode is to be established through GI strip using GI bolts and nuts.		
	8 SWG GI Wire		
		24.00	Mtrs
28	Supplying and running of GI/Copper strips for grounding connections, using necessary fixing materials as required.		
	25mm x 3mm GI Patti		
		50.00	Rmt
29	Supplying and drawing 3 core flat PVC sheathed submersible pump cable manufactured with electrolytic grade copper with flexible copper with low resistance conductor confirming to IS:8130-1984 and virgin grade PVC insulation and powder coating extruded PVC sheathed suitable for working voltage upto 1100Volts as per IS-694:1990.		
	Submersible Flat Cable 3C X 4 sqm		
		110.00	Rmt
	CONTROL PANEL		
30	Supplying and fixing Moulded Case Circuit Breaker (MCCB) over the existing wood/panel board using necessary screws, bolts, nuts, necessary phase separators, handle and wiring complete. Protection of Overload and Short circuit with thermal Magnetic/Micro processor release and Earth Fault as per IS 13947. (Icu = Ics)		
	THREE POLE		
	200Amps 36kA.		
		1.00	EACH
31	Supplying and fixing miniature circuit breakers on existing MCB distribution boards using necessary fixing materials and 'C' Type curve, indicator ON/OFF, energy cross-3 with Short circuit breaking capacity of 10K and complete wiring as required confirming to IEC 60898.		
	6-32Amps TPN		
		2.00	EACH
32	Supplying fully automatic star-delta starter Unit push button type with suitable wires, 3 contactors, one adjustable thermal timer mounted on a common base plate held in steel enclosure for use on 400/440 volts 3 phase and wired after fixing to the existing wooden board for motor		
	Upto 12.5 HP		
		2.00	EACH
33	For Distribution Transformer Centre (DTC) MS Box for housing the ETV Meter 3 Phase 4 Wire 5 Amps, with associated LT CT 0.5 Accuracy Class, ring type, with wiring Clamps, B&N and all other accessories required. (EXCLUDING ETV METER) With CT Ratio 800/5 for 500 kVA DTC		

	Total Rate (₹)	**2.00**	EACH
34	Supplying and fixing of Modular MCB Devices (Tripper) With Breaking capacity of 6kA.		
	16 - 32 A SP		
		2.00	EACH

BRUHAT BANGALORE MAHANAGARA PALIKE

Name of the Work : Improvements to 20 numbers major junctions with greenery to improve air quality around the junction

NAGARBHAVI 12TH BLOCK BUS STOP CIVIL WORKS ESTIMATE

SL no	Description of work	Unit	Nos.	Dimension			Quantity	Unit
				Length	Breadth	Depth		
1	**Earth work excavation** for Foundation by Mechanical means depth upto 1.50m, as per drawing and technical specifications, including setting out, shoring, strutting, barricading, caution lights, including cost of explosives, dressing of excavated surfaces, disposing off or levelling the excavated stuff or sorting & stacking the selected stuff for reuse in a radius of 50 m and lift upto 1.5 m including cost of labour, blasting materials, tools, usage of Machinery & all other appurtenaces required to complete the work complete.							
	In Hard Rock (requiring blasting) Depth upto 1.50m							
	Unit	Cum						
	For Footpath Kerb		1	92.00	0.45	0.30	12.42	
	For Island Kerb		1	122.00	0.45	0.30	16.47	
	For Pole Lights		10.00	0.60	0.60	0.60	2.16	
	Total						**31.05**	Cum
2	Providing and laying in position **Cement Concrete** for levelling course for all works in foundation. The granite/trap/basalt crushed graded coarse aggregates and fine aggregates as per relevant IS Codesmachine mixed, laid in layers not exceeding 150 mm thickness, well compacted using plate vibrators, including all lead & lifts, cost of all materials of quality, labour, Usage charges of machinery, curing, and all the other appurtenances required to complete the work as per technical specifications.							
	Mix **1:3:6** Using **20 mm** nominal size graded crushed coarse aggregates							
	Unit	Cum						
	For Footpath Kerb		1	92.00	0.45	0.15	6.21	
	For Island Kerb		1	122.00	0.45	0.15	8.24	
	For Footpath flooring		1	158.00		0.15	23.70	
	For Pole Lights		10.00	0.60	0.60	0.60	2.16	
	Total						**40.31**	Cum
3	Providing, laying, spreading and compacting graded stone aggregate to **wet mix macadam** specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver/grader in sub-base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density. MORTH Specification No. 406							
	Unit	Cum						
	For Footpath Kerb		1	92.00	0.45	0.15	6.21	
	For Island Kerb		1	122.00	0.45	0.15	8.24	
	For Footpath flooring		1	158.00		0.15	23.70	
	Total						**38.15**	Cum
4	Providing and laying **60mm** thick factory made precast M -30 grade **Cement Concrete Paver Block** as per IRC SP 63:2018 & IS 15658 for Cycle Tracks & Pedestrian Footpaths of approved shape and colour, laid in required pattern and including over 30mm thick compacted bed of coarse sand, filling the joints with fine sand etc. all complete as per the direction of Engineer-in charge. (WMM/WBM Base to be							

	Unit	Sqm						
	For Footpath flooring		1	164.00		--	164.00	
	For Island flooring		1	96.00		--	96.00	
	Total						**260.00**	Sqm
5	Supplying and fixing M15 grade precast **cement concrete Kerb stone**s for Roadway, Sidewalls and gutters fixed with CM 1:3 fixed and finsihed in line as per direction of Engineer in charge. (The cost of PCC shall be paid extra) (PgNo - 74, Item No - 8.42.3 of Vol II PWD S.R 2023 - 24)							
	600 x 300 x 150 mm size							
	Unit	M						
	For Footpath Kerb		1	92.00	--	--	92.00	
	For Island Kerb		1	122.00	--	--	122.00	
	Total						**214.00**	M
6	Providing and applying tack coat with **RS1 Bituminous Emulsion** using emulsion pressure distributor at the rate of 0.20 kg/m2 on the prepared bituminous surface cleaned with mechanical broom							
	Unit	Sqm						
	For HRPC		1	7.00	8.00	--	56.00	
	Total						**56.00**	Sqm
7	Providing and laying **Bituminous Concrete** with 100 TPH capacity hot mix plant batch type using crushed aggregates of specified grading, premixed with bituminous binder VG-30, @ 5.4 per cent of mix and filler, transporting the hot mix to work site, laying with mechanical paver finisher to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH specification clause No. 507							
	Unit	Cum						
	For HRPC							
	Below Cobble stone							
			1	7.00	3.00	0.05	1.05	
	For Slopes							
			2	7.00	3.00	0.19	7.88	
					0.5 x 2.5 x 0.15			
	Total						**8.93**	Cum
8	Providing and laying 100mm thick factory made **precast M - 40 grade Cement Concrete Paver Block** as per IRC SP 63:2018 & IS 15658 for Commercial Traffic Axle load repetitions more than 10MSA upto 20MSA for Industrial Streets, Bus & Truck parking of approved shape and colour, laid in required pattern an including over 40mm thick compacted bed of coarse sand, filling the joints with fine sand etc. all complete as per the direction of Engineer-in-charge.							
	Unit	Sqm						
	For HRPC		1	7.00	3.00	--	21.00	
	Total						**21.00**	Sqm
9	Providing and laying of **hot applied thermoplastic compound** 2.5 mm thick including reflectorising glass beads @ 250 g/m2 area, thickness of 2.5 mm is exclusive of surface applied glass beads as per IRC:35:2015.The finished surface to be level, uniform and free from streaks and holes.							

	Unit	Sqm						
	Zebra Crossings		90	4.00	0.50	--	180.00	
	End Lane		1	468.00	0.25	--	117.00	
	Divider lane		1	386.00	0.25	--	96.50	
	Total						**393.50**	Sqm
10	Supplying and Fixing of **Molded Shank Raised Pavement Markers / Cat's Eye** made of polycarbonate and ABS moulded body and reflective panels with micro prismatic lens capable of providing total internal reflection of the light entering the lens face and shall support a load of 16000 kg tested in accordance to ASTM D 4280 Type H and complying to Specifications of Category A of MORTH Circular No RW/NH/33023/10-97 DO III Dt 11.06. 1997. The height, width and length shall not exceed 50 mm, 100 mm and 102 +/- 2 mm and with minimum reflective area of 13 cm2 on each side and the slope to the base shall be 35 +/- 5 degree. The strength of detachment of the integrated cylindrical shanks, (of diameter not less than 19 +/- 2 mm and height not less than 30+/- 2 mm) from the body is to be a minimum value of 500 Kg. Fixing will be by drilling holes on the road for the shanks to go inside, without nails and using epoxy resin based adhesive as per manufacturer's recommendation and complete as directed by the engineer.The contractor shall submit a two year warranty for satisfactory field performance including stipulated retro-reflectance of the reflecting panel, to the Engineer.							
	Unit	Sqm						
	Roads		120	--	--	--	120.00	
	Total						**120.00**	Sqm
11	**Retro-Reflectorised Traffic Signs** - Providing and fixing of retro- reflectorised cautionary, mandatory and informatory sign as per IRC:67:2022 made of Class C Type XI retro reflective sheeting fixed over 2 mm thick aluminium sheeting vide clause 801.3, 3mm/4mm thick Aluminium composite material sheet depending on the size of the sign fixed over the back support frame of min 25 x 25 x 3mm angle mounted on a mild steel circular pipe 65 NB, 3.2 mm thickness firmly fixed to the ground by means of properly designed foundation with M25 grade cement concrete 45 cm x 45 cm x 60 cm, 60 cm below ground level as per approved drawing.The sign shall be maintained as per section 12 of IRC:67:2022. **90 cm equilateral triangle**							
	Unit	Sqm						
	Roads		40	--	--	--	40.00	
	Total						**40.00**	Sqm
12	**Road Delineators** - Supplying and installation of delineators (road way indicators, hazard markers, object markers), 80-100 cm high above ground level, painted black and white in 15 cm wide strips, fitted with 80 x 100 mm rectangular or 75 mm dia circular reflectorised panels at the top, buried or pressed into the ground and conforming to IRC-79-2019 and the drawings.							
	Unit	Each						
	Roads		40	--	--	--	40.00	
	Total						**40.00**	Each

13	**Chevron Boards** - Supply and installation of retro- reflective **Chevron signboards of 600x450mm** made out of cube corner micro prismatic grade sheeting confirming to Type XI standards of IRC:67:2022 & ASTM D 4956-09 specification & fixed over 3 mm thick Aluminium Composite Panel sheet having minimum 0.30 mm thick aluminum skin on both sides & fixed over back support frame of 25x25x 3mm MS angle frame. Supported on 75 mm dia OR 75x75x6mm Mild steel with clear height of not less than 2.1 m from the ground level to the bottom of the Sign board & 60 cm below ground level. The sign post should be painted with one coat of red oxide paint and two coats of synthetic enamel paint of black and white colour with bands of 30 cm height, firmly fixed to the ground by means of foundation with M 20 grade cement, concrete foundation size of 45 cm x 45 cm x 60 cm including cost & conveyance of all							
	Unit	No						
	Roads		20	--	--	--	20.00	
	Total						**20.00**	No
14	**Tubular Marker / Spring post 700 mm (Flexible Bollards)** - Providing Tubular marker made up of Polyurethane used to divide opposing lanes of road users shall be fixible in nature. Tubular marker having height 700 mm shall be having 75 mm Reboundable work zone retroreflective sheeting as per ASTM 4956 S2 (Application of Tubular Marker shall be done as per IRC:SP							
	Unit	No						
	Roads		40	--	--	--	40.00	
	Total						**40.00**	No
	NON SR ITEMS							
15	Providing and supplying of sadarahalli grey **granite bollards** of height 0.9 m and width of 0.45m width, cut to required shape including cost of all materials, labour, transportation etc							
	Unit	Nos						
							25.00	Nos
	Civil Sub Total							
	NAGARBHAVI 12TH BLOCK BUS STOP ELECTRICAL ESTIMATE							
SL No	**DESCRIPTION**		**N**	**L**	**B**	**D**	**Qty**	**Unit**
	POLE LIGHT							
16	Supply and erection of 14 Feet Height Street Light Pole 14 Feet Height Street Light Pole on suitable cement concrete foundation with 2.5 Feet height dia 95 mm cast iron decorative round pedestal as per design weighing not less than 37Kgs, the pedestal shall be fitted with Class 'C' G.I.Pipe 7 Feet height 75 mm outer dia and 7 feet height top pieceouter dia of 65 mm fixed by measure of threading/welding/coupling complete. (excluding foundation).							
							10.00	Nos
	POLE LIGHT FIXTURE							

17	Supply of LED pole mounting type post top lantern with pressure die cast aluminium housing body for optimal thermal dissipation. Lamp compartment comprising of anti glare clear diffuser with Injection moulded polycarbonate/ clear glass material, delivering superior light outputRated life Burning Hrs 50000 hr@ Lumen Maintenance of 70%, CCT > 5500K, IP 66 optical and electrical compartment & impact resistance of complete luminaire >IK08. Power Factor>0.9 with mains, Surge Protection- Min 5KV along with Over voltage/Overload, short circuit/ miss-wiring protection. Compatible for pole mounting with outer dia of 40mm to 50mm. Universal Voltage driver to operate wide voltage range from 100V to 270V 50/60Hz application. Compliance to IS 10322/1 EC 60598, LM 79 & LM 80 Adherence with RoHS. UL approved MCPCB LED Efficiency>1301m/w, nominal CRI >75. Luminaire manufacturer should have in-house facility accredited by NABL/CPRI & any Government certified agency & Design & Development facility certified by ISO 9001:2008. Housing with supplier word mark /name shall be Engraved / Embossing on the die cast housing/ Body part Warranty of 2 Years against anymanufacturing defect working under standard electrical conditions as mentioned above should be given by LED manufacturer & Cree/Nichia/ Lumileds/Osram make LED Source.		
	LED Post Top Lantern with 45 W		
		10.00	Nos
	FIXING CHARGES		
18	Fixing charges of post top/ Gate/ Garden fitting /LED on the existing CI / GI or any other pipe using required size of reducer, wiring using suitable wires		
		10.00	Nos
	CONDUIT & ITS ACCESSORIES		
19	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply, including all CPVC plain & brass threaded fittings, including fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and testing of joints complete as per direction of Engineer in Charge. Internal work - Exposed on wall.50 mm nominal dia Pipes		
	Total	380.00	Mtrs
		0.00	
	L.T. U.G. CABLES		
20	LT UG Cable. Heat shrinkable Straight Through Joint. 2.5 to 25 Sqmm		
		380.00	Mtrs
21	4 Core, 16 Sqmm, 30 No GI Wires (1.6 mm)		
		380.00	Mtrs
22	LABOUR for Aerial Bunched Conductor & Accessories. Stringing of 11 kV grade Aerial Bunched 3 Core cable of XLPE insulation of size 3x95 Sqmm + 1x70 Sqmm with Insulated Messenger Wire		
		760.00	Mtrs
23	Digging of Pit 1.8 Mtr depth for errection of 9 to 10 Mtr Long Steel/RCC/PSCC supports as per approved Drawing.		
	Hard Rock (By Chizling and/Or Wedging)		
		20.00	Mtrs
	WIRES & CABLES		
24	Supplying and drawing Flexible Multicore Cable manufactured with electrolytic grade flexible copper with low conductor confirming to IS:8130-1984 and (Virgin) PVC insulation sheathed suitable for working voltage upto 1100Volts as per IS-694:1990		
	3C X 4Sq.mm Copper Flexible		
		620.00	Mtrs

25	Supplying fixing and wiring earth electrode for grounding of lifts, transformers, DG sets etc. using 40 mm dia 2.9 mm thick 2.5m long GI pipe with GI funnel with mesh and suitable size reducer fixed on the top of the earth electrode.The funnel should be enclosed in a CC chamber of 400x400x400 mm with a cast iron cover. The earth electrode shall have staggered holes of 12 mm dia and the electrode should be covered 150 mm all-round with alternate layers of salt and charcoal from the bottom of the CC chamber. The connection from the electrode is to be		
	8 SWG GI Wire		
		20.00	Mtrs
26	Supplying and running of GI/Copper strips for grounding connections, using necessary fixing materials as required.		
	25mm x 3mm GI Patti		
		50.00	Rmt
27	Supplying and drawing 3 core flat PVC sheathed submersible pump cable manufactured with electrolytic grade copper with flexible copper with low resistance conductor confirming to IS:8130-1984 and virgin grade PVC insulation and powder coating extruded PVC sheathed suitable for working voltage upto 1100Volts as per IS-694:1990.		
	Submersible Flat Cable 3C X 4 sqm		
		110.00	Rmt
	CONTROL PANEL		
28	Supplying and fixing Moulded Case Circuit Breaker (MCCB) over the existing wood/panel board using necessary screws, bolts, nuts, necessary phase separators, handle and wiring complete. Protection of Overload and Short circuit with thermal Magnetic/Micro processor release and Earth Fault as per IS 13947. (Icu = Ics)		
	THREE POLE		
	200Amps 36kA.		
		1.00	EACH
29	Supplying and fixing miniature circuit breakers on existing MCB distribution boards using necessary fixing materials and 'C' Type curve, indicator ON/OFF, energy cross-3 with Short circuit breaking capacity of 10K and complete wiring as required confirming to IEC 60898.		
	6-32Amps TPN		
		2.00	EACH
30	Supplying fully automatic star-delta starter Unit push button type with suitable wires, 3 contactors, one adjustable thermal timer mounted on a common base plate held in steel enclosure for use on 400/440 volts 3 phase and wired after fixing to the existing wooden board for meter		
	Upto 12.5 HP		
		2.00	EACH
31	For Distribution Transformer Centre (DTC) MS Box for housing the ETV Meter 3 Phase 4 Wire 5 Amps, with associated LT CT 0.5 Accuracy Class, ring type, with wiring Clamps, B&N and all other accessories required. (EXCLUDING ETV METER) With CT Ratio 800/5 for 500 kVA DTC		
		2.00	EACH
32	Supplying and fixing of Modular MCB Devices (Tripper) With Breaking capacity of 6kA.		
	16 - 32 A SP		
		2.00	EACH

BRUHAT BANGALORE MAHANAGARA PALIKE

Name of the Work : Improvements to 20 numbers major junctions with greenery to improve air quality around the junction

TC PALYA MAIN ROAD BRIDGE CIVIL WORKS ESTIMATE

SL no	Description of work	Unit	Nos.	Dimension			Quantity	Unit
				Length	Breadth	Depth		
1	**Dismantling of cement concrete pavement** by mechanical means using pneumatic tools, breaking to pieces not exceeding 0.02 m3 in volume and stock piling at designated locations and disposal of dismantled materials and stacking serviceable and unserviceable materials separately							
	Unit	Cum						
	Footpath Flooring		1	317.00		0.15	47.55	
	Total						**47.55**	Cum
2	**Dismantling kerb stone** by manual means and disposal of dismantled material with all lifts and							
	Unit	Cum						
	Kerbs		1	290.00		0.15	43.50	
	Total						**43.50**	Cum
3	**Earth work excavation** for Foundation by Mechanical means depth upto 1.50m, as per drawing and technical specifications, including setting out, shoring, strutting, barricading, caution lights, including cost of explosives, dressing of excavated surfaces, disposing off or levelling the excavated stuff or sorting & stacking the selected stuff for reuse in a radius of 50 m and lift upto 1.5 m including cost of labour, blasting materials, tools, usage of Machinery & all other appurtenaces required to complete the work complete							
	In Hard Rock (requiring blasting) Depth upto 1.50m							
	Unit	Cum						
	For Footpath Kerb		1	310.00	0.45	0.30	41.85	
	For Island Kerb		1	241.00	0.45	0.30	32.54	
	For Planter Kerb		1	257.00	0.45	0.30	34.70	
	For Planter wall		2	57.00	0.30	0.15	5.13	
	For Pole Lights		12.00	0.60	0.60	0.60	2.59	
	Total						**116.80**	Cum
4	Loading and Unloading of Stone Boulder/Stone aggregates/Sand/Kankar/Moorum. (Tipper 5.5							
	Unit	Cum						
	Demolished works						**207.85**	
	Total						**207.85**	Cum
5	Providing and laying in position **Cement Concrete** for levelling course for all works in foundation. The granite/trap/basalt crushed graded coarse aggregates and fine aggregates as per relevant IS Codesmachine mixed, laid in layers not exceeding 150 mm thickness, well compacted using plate vibrators, including all lead & lifts, cost of all materials of quality, labour, Usage charges of machinery, curing, and all the other appurtenances required to complete the work as per technical specifications.							
	Mix **1:3:6** Using **20 mm** nominal size graded crushed coarse aggregates							

	Unit	Cum						
	For Footpath Kerb		1	310.00	0.45	0.15	20.93	
	For Island Kerb		1	241.00	0.45	0.15	16.27	
	For Planter Kerb		1	257.00	0.45	0.15	17.35	
	For Footpath flooring		1	382.00		0.15	57.30	
	For Planter wall		2	57.00	0.30	0.15	5.13	
	For Pole Lights		12.00	0.60	0.60	0.60	2.59	
	Total						**119.56**	Cum

6	Providing, laying, spreading and compacting graded stone aggregate to **wet mix macadam** specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver/grader in sub-base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density. MORTH Specification No. 406							
	Unit	Cum						
	For Footpath Kerb		1	310.00	0.45	0.15	20.93	
	For Island Kerb		1	241.00	0.45	0.15	16.27	
	For Planter Kerb		1	257.00	0.45	0.15	17.35	
	For Footpath flooring		1	382.00		0.15	57.30	
	For Planter wall		2	57.00	0.30	0.15	5.13	
	Total						**116.97**	Cum
7	Providing **Brick work** with common burnt clay Non Modular bricks of class designation 3.5 in superstructure above plinth level in all shapes and sizes in Cement mortar 1:6 (1 cement : 6 coarse sand) including cost of all materials, labour, scaffolding and usage charges of machinery & other incidental charges complete as per the direction of engineer incharge of work.							
	Unit	Cum						
	For Planter wall		2	57.00	0.30	1.20	41.04	
	Total						**41.04**	Cum
8	Providing **15 mm cement plaster** on rough side of single or half brick wall finished with a floating coat of neat cement of mix 1:3 (1 cement: 3 fine sand) including rounding off corners wherever required smooth rendering, providing and removing scaffolding, including cost of materials, labour, curing complete as per specifications and as per directions of Engineer-in-charge.							
	Unit	Sqm						
	For Planter wall		4	57.00	--	1.20	273.60	
	For Planter wall coping		2	57.00	--	0.30	34.20	
	Total						**273.60**	Sqm

9	Providing and laying **Black Lapotra Granite** stone flooring in linear as well as curvilinear portions of the building all complete as per the architectural drawings with 18mm thick stone slab over 20 mm (average) thick base of cement mortar 1:4 (1 cement : 4 coarse sand) laid and jointed with cement slurry and pointing with white cement slurry admixed with pigment of matching shade including rubbing , curing and polishing etc. all complete as specified and as directed by the Engineer-in-charge.							
	Unit	Sqm						
	For Planter wall cladding		2	57.00	--	1.20	136.80	
	For Planter wall coping		2	57.00	--	0.30	34.20	
	Total						**171.00**	Sqm
10	Providing and laying **60mm** thick factory made precast M -30 grade **Cement Concrete Paver Block** as per IRC SP 63:2018 & IS 15658 for Cycle Tracks & Pedestrian Footpaths of approved shape and colour, laid in required pattern and including over 30mm thick compacted bed of coarse sand, filling the joints with fine sand etc. all complete as per the direction of Engineer-in charge. (WMM/WBM Base to be							
	Unit	Sqm						
	For Footpath flooring		1	382.00		--	382.00	
	Total						**382.00**	Sqm
11	Supplying and fixing M15 grade precast **cement concrete Kerb stone**s for Roadway, Sidewalls and gutters fixed with CM 1:3 fixed and finsihed in line as per direction of Engineer in charge. (The cost of PCC shall be paid extra)							
	600 x 300 x 150 mm size							
	Unit	M						
	For Footpath Kerb		1	310.00	--	--	310.00	
	For Island Kerb		1	241.00	--	--	241.00	
	For Planter Kerb		1	257.00	--	--	257.00	
	Total						**551.00**	M
12	Providing and applying tack coat with **RS1 Bituminous Emulsion** using emulsion pressure distributor at the rate of 0.20 kg/m2 on the prepared bituminous surface cleaned with mechanical broom							
	Unit	Sqm						
	For HRPC		2	7.00	8.00	--	112.00	
	Total						**112.00**	Sqm
13	Providing and laying **Bituminous Concrete** with 100 TPH capacity hot mix plant batch type using crushed aggregates of specified grading, premixed with bituminous binder VG-30, @ 5.4 per cent of mix and filler, transporting the hot mix to work site, laying with mechanical paver finisher to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH specification clause No. 507							
	Unit	Cum						
	For HRPC							
	Below Cobble stone							

			2	7.00	3.00	0.05	2.10	
	For Slopes							
			4	7.00	3.00	0.19	15.75	
						0.5 x 2.5 x 0.15		
	Total						**17.85**	Cum
14	Providing and laying 100mm thick factory made **precast M - 40 grade Cement Concrete Paver Block** as per IRC SP 63:2018 & IS 15658 for Commercial Traffic Axle load repetitions more than 10MSA upto 20MSA for Industrial Streets, Bus & Truck parking of approved shape and colour, laid in required pattern an including over 40mm thick compacted bed of coarse sand, filling the joints with fine sand etc. all complete as per the direction of Engineer-in-charge.							
	Unit	Sqm						
	For HRPC		2	7.00	3.00	--	42.00	
	Total						**42.00**	Sqm
15	Providing and laying of **hot applied thermoplastic compound** 2.5 mm thick including reflectorising glass beads @ 250 g/m2 area, thickness of 2.5 mm is exclusive of surface applied glass beads as per IRC:35:2015.The finished surface to be level, uniform and free from streaks and							
	Unit	Sqm						
	For HRPC Slopes		4	2.50	0.50	--	5.00	
	For Stop Lane		20	7.00	0.25	--	35.00	
	Zebra Crossings		90	4.00	0.50	--	180.00	
	End Lane		1	1335.00	0.25	--	333.75	
	Divider lane		1	928.00	0.25	--	232.00	
	Patterns		1	969.00		--	969.00	
	Total						**1754.75**	Sqm
16	Supplying and Fixing of **Molded Shank Raised Pavement Markers / Cat's Eye** made of polycarbonate and ABS moulded body and reflective panels with micro prismatic lens capable of providing total internal reflection of the light entering the lens face and shall support a load of 16000 kg tested in accordance to ASTM D 4280 Type H and complying to Specifications of Category A of MORTH Circular No RW/NH/33023/10-97 DO III Dt 11.06. 1997. The height, width and length shall not exceed 50 mm, 100 mm and 102 +/- 2 mm and with minimum reflective area of 13 cm2 on each side and the slope to the base shall be 35 +/- 5 degree. The strength of detachment of the integrated cylindrical shanks, (of diameter not less than 19 +/- 2 mm and height not less than 30+/- 2 mm) from the body is to be a minimum value of 500 Kg. Fixing will be by drilling holes on the road for the shanks to go inside, without nails and using epoxy resin based adhesive as per manufacturer's recommendation and complete as directed by the engineer The contractor shall submit a two year warranty for satisfactory field performance							
	Unit	Sqm						
	Roads		230	--	--	--	230.00	
	Total						**230.00**	Sqm

17	**Retro-Reflectorised Traffic Signs** - Providing and fixing of retro- reflectorised cautionary, mandatory and informatory sign as per IRC:67:2022 made of Class C Type XI retro reflective sheeting fixed over 2 mm thick aluminium sheeting vide clause 801.3, 3mm/4mm thick Aluminium composite material sheet depending on the size of the sign fixed over the back support frame of min 25 x 25 x 3mm angle mounted on a mild steel circular pipe 65 NB, 3.2 mm thickness firmly fixed to the ground by means of properly designed foundation with M25 grade cement concrete 45 cm x 45 cm x 60 cm, 60 cm below ground level as per approved drawing.The sign shall be maintained as per section 12 of IRC:67:2022. **90 cm equilateral triangle**							
	Unit	Sqm						
	Roads		60	--	--	--	60.00	
	Total						**60.00**	Sqm
18	**Road Delineators** - Supplying and installation of delineators (road way indicators, hazard markers, object markers), 80-100 cm high above ground level, painted black and white in 15 cm wide strips, fitted with 80 x 100 mm rectangular or 75 mm dia circular reflectorised panels at the top, buried or pressed into the ground and conforming to IRC-79-2019 and the drawings.							
	Unit	Each						
	Roads		50	--	--	--	50.00	
	Total						**50.00**	Each
19	**Chevron Boards** - Supply and installation of retro- reflective **Chevron signboards of 600x450mm** made out of cube corner micro prismatic grade sheeting confirming to Type XI standards of IRC:67:2022 & ASTM D 4956-09 specification & fixed over 3 mm thick Aluminium Composite Panel sheet having minimum 0.30 mm thick aluminum skin on both sides & fixed over back support frame of 25x25x 3mm MS angle frame. Supported on 75 mm dia OR 75x75x6mm Mild steel with clear height of not less than 2.1 m from the ground level to the bottom of the Sign board & 60 cm below ground level. The sign post should be painted with one coat of red oxide paint and two coats of synthetic enamel paint of black and white colour with bands of 30 cm height, firmly fixed to the ground by means of foundation with M 20 grade cement, concrete foundation size of 45 cm x 45 cm x 60 cm including cost & conveyance of all materials,							
	Unit	No						
	Roads		20	--	--	--	20.00	
	Total						**20.00**	No
20	**Tubular Marker / Spring post 700 mm (Flexible Bollards)** - Providing Tubular marker made up of Polyurethane used to divide opposing lanes of road users shall be fixible in nature. Tubular marker having height 700 mm shall be having 75 mm Reboundable work zone retroreflective sheeting as per ASTM 4956 S2 (Application of Tubular Marker shall be done as per IRC:SP 55-2014)							
	Unit	No						
	Roads		40	--	--	--	40.00	
	Total						**40.00**	No
	NON SR ITEMS							

21	Providing and supplying of sadarahalli grey **granite bollards** of height 0.9 m and width of 0.45m width, cut to required shape including cost of all materials, labour, transportation etc							
	Unit	Nos						
							75.00	Nos

	Civil Sub Total							
	TC PALYA MAIN ROAD BRIDGE ELECTRICAL ESTIMATE							
SL No	**DESCRIPTION**		**N**	**L**	**B**	**D**	**Qty**	**Unit**
	POLE LIGHT							
22	Supply and erection of 14 Feet Height Street Light Pole 14 Feet Height Street Light Pole on suitable cement concrete foundation with 2.5 Feet height dia 95 mm cast iron decorative round pedestal as per design weighing not less than 37Kgs, the pedestal shall be fitted with Class 'C' G.I.Pipe 7 Feet height 75 mm outer dia and 7 feet height top pieceouter dia of 65 mm fixed by measure of threading/welding/coupling complete. (excluding foundation).							
							12.00	Nos
	POLE LIGHT FIXTURE							
23	Supply of LED pole mounting type post top lantern with pressure die cast aluminium housing body for optimal thermal dissipation. Lamp compartment comprising of anti glare clear diffuser with Injection moulded polycarbonate/ clear glass material, delivering superior light outputRated life Burning Hrs 50000 hr@ Lumen Maintenance of 70%, CCT > 5500K, IP 66 optical and electrical compartment & impact resistance of complete luminaire >IK08. Power Factor>0.9 with mains, Surge Protection- Min 5KV along with Over voltage/Overload, short circuit/ miss-wiring protection. Compatible for pole mounting with outer dia of 40mm to 50mm. Universal Voltage driver to operate wide voltage range from 100V to 270V 50/60Hz application. Compliance to IS 10322/1 EC 60598, LM 79 & LM 80 Adherence with RoHS. UL approved MCPCB LED Efficiency>1301m/w, nominal CRI >75. Luminaire manufacturer should have in-house facility accredited by NABL/CPRI & any Government certified agency & Design & Development facility certified by ISO 9001:2008. Housing with supplier word mark /name shall be Engraved / Embossing on the die cast housing/ Body part Warranty of 2 Years against							
	LED Post Top Lantern with 45 W							
							12.00	Nos
	FIXING CHARGES							
24	Fixing charges of post top/ Gate/ Garden fitting /LED on the existing CI / GI or any other pipe using required size of reducer, wiring using suitable wires							
							12.00	Nos
	CONDUIT & ITS ACCESSORIES							
25	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply, including all CPVC plain & brass threaded fittings, including fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and testing of joints complete as per direction of Engineer in Charge. Internal work - Exposed on							
	Total						620.00	Mtrs
	L.T. U.G. CABLES							
26	LT UG Cable. Heat shrinkable Straight Through Joint. 2.5 to 25 Sqmm							

		620.00	Mtrs
27	4 Core, 16 Sqmm, 30 No GI Wires (1.6 mm)		
		620.00	Mtrs
28	LABOUR for Aerial Bunched Conductor & Accessories. Stringing of 11 kV grade Aerial Bunched 3 Core cable of XLPE insulation of size 3x95 Sqmm + 1x70 Sqmm with Insulated Messenger Wire		
		1240.00	Mtrs
29	Digging of Pit 1.8 Mtr depth for errection of 9 to 10 Mtr Long Steel/RCC/PSCC supports as per approved Drawing.		
	Hard Rock (By Chizling and/Or Wedging)		
		20.00	Mtrs
	WIRES & CABLES		
30	Supplying and drawing Flexible Multicore Cable manufactured with electrolytic grade flexible copper with low conductor confirming to IS:8130-1984 and (Virgin) PVC insulation sheathed suitable for working voltage upto 1100Volts as per IS-694:1990		
	3C X 4Sq.mm Copper Flexible		
		620.00	Mtrs
31	Supplying fixing and wiring earth electrode for grounding of lifts, transformers, DG sets etc. using 40 mm dia 2.9 mm thick 2.5m long GI pipe with GI funnel with mesh and suitable size reducer fixed on the top of the earth electrode.The funnel should be enclosed in a CC chamber of 400x400x400 mm with a cast iron cover. The earth electrode shall have staggered holes of 12 mm dia and the electrode should be covered 150 mm all-round with alternate layers of salt and charcoal from the bottom of the CC chamber. The connection from the electrode is to be		
	8 SWG GI Wire		
		24.00	Mtrs
32	Supplying and running of GI/Copper strips for grounding connections, using necessary fixing materials as required.		
	25mm x 3mm GI Patti		
		50.00	Rmt
33	Supplying and drawing 3 core flat PVC sheathed submersible pump cable manufactured with electrolytic grade copper with flexible copper with low resistance conductor confirming to IS:8130-1984 and virgin grade PVC insulation and powder coating extruded PVC sheathed suitable for working voltage upto 1100Volts as per IS-694:1990.		
	Submersible Flat Cable 3C X 4 sqm		
		110.00	Rmt
	CONTROL PANEL		
34	Supplying and fixing Moulded Case Circuit Breaker (MCCB) over the existing wood/panel board using necessary screws, bolts, nuts, necessary phase separators, handle and wiring complete. Protection of Overload and Short circuit with thermal Magnetic/Micro processor release and Earth Fault as per IS 13947. (Icu = Ics)		
	THREE POLE		
	200Amps 36kA.		

		1.00	EACH
35	Supplying and fixing miniature circuit breakers on existing MCB distribution boards using necessary fixing materials and 'C' Type curve, indicator ON/OFF, energy cross-3 with Short circuit breaking capacity of 10K and complete wiring as required confirming to IEC 60898.		
	6-32Amps TPN		
		2.00	EACH
36	Supplying fully automatic star-delta starter Unit push button type with suitable wires, 3 contactors, one adjustable thermal timer mounted on a common base plate held in steel enclosure for use on 400/440 volts 3 phase and wired after fixing to the existing wooden board for motor		
	Upto 12.5 HP		
		2.00	EACH
37	For Distribution Transformer Centre (DTC) MS Box for housing the ETV Meter 3 Phase 4 Wire 5 Amps, with associated LT CT 0.5 Accuracy Class, ring type, with wiring Clamps, B&N and all other accessories required. (EXCLUDING ETV METER) With CT Ratio 800/5 for 500 kVA DTC		
		2.00	EACH
38	Supplying and fixing of Modular MCB Devices (Tripper) With Breaking capacity of 6kA.		
	16 - 32 A SP		
		2.00	EACH

BRUHAT BANGALORE MAHANAGARA PALIKE

Name of the Work : Improvements to 20 numbers major junctions with greenery to improve air quality around the junction

SP ROAD JUNCTION CIVIL WORKS ESTIMATE

SL no	Description of work	Unit	Nos.	Dimension			Quantity	Unit
				Length	Breadth	Depth		
1	**Dismantling of existing structures** like culverts, bridges, retaining walls and other structure comprising of masonry, cement concrete, wood work, steel work, including T&P and scaffolding wherever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts complete as per specifications. i) Lime /Cement Concrete. I. By Manual Means: :B. Cement Concrete Grade M-15 & M-20. MORTH Specification No. 202.							
	Unit	Cum						
	Island retaining wall		1	103.00	0.60	0.90	55.62	
	Total						**55.62**	Cum
2	**Dismantling of cement concrete pavement** by mechanical means using pneumatic tools, breaking to pieces not exceeding 0.02 m3 in volume and stock piling at designated locations and disposal of dismantled materials and stacking serviceable and unserviceable materials separately.							
	Unit	Cum						
	Footpath Flooring		1	62.00		0.15	9.30	
	Total						**9.30**	Cum
3	**Dismantling kerb stone** by manual means and disposal of dismantled material with all lifts and lead							
	Unit	Cum						
	Kerbs		1	135.00		0.15	20.25	
	Total						**20.25**	Cum
4	**Earth work excavation** for Foundation by Mechanical means depth upto 1.50m, as per drawing and technical specifications, including setting out, shoring, strutting, barricading, caution lights, including cost of explosives, dressing of excavated surfaces, disposing off or levelling the excavated stuff or sorting & stacking the selected stuff for reuse in a radius of 50 m and lift upto 1.5 m including cost of labour, blasting materials, tools, usage of Machinery & all other appurtenaces required to complete the work complete.							
	In Hard Rock (requiring blasting) Depth upto 1.50m							
	Unit	Cum						
	For Footpath Kerb		1	126.00	0.45	0.30	17.01	
	For Island Kerb		1	103.00	0.45	0.30	13.91	

	Total						**13.91**	Cum
5	Loading and Unloading of Stone Boulder/Stone aggregates/Sand/Kankar/Moorum. (Tipper							
	Unit	Cum						
	Demolished works						**99.08**	
	Total						**99.08**	Cum
6	Providing and laying in position **Cement Concrete** for levelling course for all works in foundation. The granite/trap/basalt crushed graded coarse aggregates and fine aggregates as per relevant IS Codesmachine mixed, laid in layers not exceeding 150 mm thickness, well compacted using plate vibrators, including all lead & lifts, cost of all materials of quality, labour, Usage charges of machinery, curing, and all the other appurtenances required to complete the work as per technical specifications.							
	Mix **1:3:6** Using **20 mm** nominal size graded crushed coarse aggregates							
	Unit	Cum						
	For Footpath Kerb		1	126.00	0.45	0.15	8.51	
	For Island Kerb		1	103.00	0.45	0.15	6.95	
	For Footpath flooring		1	169.00		0.15	25.35	
	For Island flooring		1	62.00		0.15	9.30	
	Total						**40.81**	Cum
7	Providing, laying, spreading and compacting graded stone aggregate to **wet mix macadam** specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver/grader in sub-base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density. MORTH Specification No. 406							
	Unit	Cum						
	For Footpath Kerb		1	126.00	0.45	0.15	8.51	
	For Island Kerb		1	103.00	0.45	0.15	6.95	
	For Footpath flooring		1	169.00		0.15	25.35	
	For Island flooring		1	62.00		0.15	9.30	
	Total						**50.11**	Cum
8	Providing and laying **60mm** thick factory made precast M -30 grade **Cement Concrete Paver Block** as per IRC SP 63:2018 & IS 15658 for Cycle Tracks & Pedestrian Footpaths of approved shape and colour, laid in required pattern and including over 30mm thick compacted bed of coarse sand, filling the joints with fine sand etc. all complete as per the direction of Engineer-in charge. (WMM/WBM Base to be paid separately if necessary as per relevant technical							
	Unit	Sqm						
	For Footpath flooring		1	169.00		--	169.00	
	For Island flooring		1	62.00		--	62.00	
	Total						**231.00**	Sqm

9	Supplying and fixing M15 grade precast **cement concrete Kerb stone**s for Roadway, Sidewalls and gutters fixed with CM 1:3 fixed and finsihed in line as per direction of Engineer in charge. (The cost of PCC shall be paid extra)							
	600 x 300 x 150 mm size							
	Unit	M						
	For Footpath Kerb		1	126.00	--	--	126.00	
	For Island Kerb		1	103.00	--	--	103.00	
	Total						**229.00**	M
10	Providing and applying tack coat with **RS1 Bituminous Emulsion** using emulsion pressure distributor at the rate of 0.20 kg/m2 on the prepared bituminous surface cleaned with mechanical broom							
	Unit	Sqm						
	For HRPC		2	15.00	8.00	--	240.00	
	Total						**240.00**	Sqm
11	Providing and laying **Bituminous Concrete** with 100 TPH capacity hot mix plant batch type using crushed aggregates of specified grading, premixed with bituminous binder VG-30, @ 5.4 per cent of mix and filler, transporting the hot mix to work site, laying with mechanical paver finisher to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH specification clause No.							
	Unit	Cum						
	For HRPC							
	Below Cobble stone							
			1	7.00	3.00	0.05	1.05	
	For Slopes							
			2	7.00	0.19	0.05	0.13	
						0.5 x 2.5 x 0.15		
	Total						**1.18**	Cum
12	Providing and laying 100mm thick factory made **precast M - 40 grade Cement Concrete Paver Block** as per IRC SP 63:2018 & IS 15658 for Commercial Traffic Axle load repetitions more than 10MSA upto 20MSA for Industrial Streets, Bus & Truck parking of approved shape and colour, laid in required pattern an including over 40mm thick compacted bed of coarse sand, filling the joints with fine sand etc. all complete as per the direction of Engineer-in-charge.							
	Unit	Sqm						
	For HRPC		1	7.00	3.00	--	21.00	
	Total						**21.00**	Sqm
13	Providing and laying of **hot applied thermoplastic compound** 2.5 mm thick including reflectorising glass beads @ 250 g/m2 area, thickness of 2.5 mm is exclusive of surface applied glass beads as per IRC:35:2015.The finished surface to be level, uniform and free from streaks							

	Unit	Sqm						
	For HRPC Slopes		2	2.50	0.50	--	2.50	
	For Stop Lane		20	7.00	0.25	--	35.00	
	Zebra Crossings		90	4.00	0.50	--	180.00	
	End Lane		1	1310.00	0.25	--	327.50	
	Divider lane		1	969.00	0.25	--	242.25	
	For pattern on the road center		1	1291.00		--	645.50	
	Total						**1432.75**	Sqm
14	Supplying and Fixing of **Molded Shank Raised Pavement Markers / Cat's Eye** made of polycarbonate and ABS moulded body and reflective panels with micro prismatic lens capable of providing total internal reflection of the light entering the lens face and shall support a load of 16000 kg tested in accordance to ASTM D 4280 Type H and complying to Specifications of Category A of MORTH Circular No RW/NH/33023/10-97 DO III Dt 11.06. 1997. The height, width and length shall not exceed 50 mm, 100 mm and 102 +/- 2 mm and with minimum reflective area of 13 cm2 on each side and the slope to the base shall be 35 +/- 5 degree. The strength of detachment of the integrated cylindrical shanks, (of diameter not less than 19 +/- 2 mm and height not less than 30+/- 2 mm) from the body is to be a minimum value of 500 Kg. Fixing will be by drilling holes on the road for the shanks to go inside, without nails and using epoxy resin based adhesive as per manufacturer's recommendation and complete as directed by the engineer The contractor shall submit a two year warranty for satisfactory field							
	Unit	Sqm						
	Roads		160	--	--	--	160.00	
	Total						**160.00**	Sqm
15	**Retro-Reflectorised Traffic Signs** - Providing and fixing of retro- reflectorised cautionary, mandatory and informatory sign as per IRC:67:2022 made of Class C Type XI retro reflective sheeting fixed over 2 mm thick aluminium sheeting vide clause 801.3, 3mm/4mm thick Aluminium composite material sheet depending on the size of the sign fixed over the back support frame of min 25 x 25 x 3mm angle mounted on a mild steel circular pipe 65 NB, 3.2 mm thickness firmly fixed to the ground by means of properly designed foundation with M25 grade cement concrete 45 cm x 45 cm x 60 cm, 60 cm below ground level as per approved drawing.The sign shall be maintained as per section 12 of IRC:67:2022. **90 cm equilateral**							
	Unit	Sqm						
	Roads		60	--	--	--	60.00	
	Total						**60.00**	Sqm

16	**Road Delineators** - Supplying and installation of delineators (road way indicators, hazard markers, object markers), 80-100 cm high above ground level, painted black and white in 15 cm wide strips, fitted with 80 x 100 mm rectangular or 75 mm dia circular reflectorised panels at the top, buried or pressed into the ground and conforming to IRC-79-2019 and the							
	Unit	Each						
	Roads		50	--	--	--	50.00	
	Total						**50.00**	Each

17	**Chevron Boards** - Supply and installation of retro- reflective **Chevron signboards of 600x450mm** made out of cube corner micro prismatic grade sheeting confirming to Type XI standards of IRC:67:2022 & ASTM D 4956-09 specification & fixed over 3 mm thick Aluminium Composite Panel sheet having minimum 0.30 mm thick aluminum skin on both sides & fixed over back support frame of 25x25x 3mm MS angle frame. Supported on 75 mm dia OR 75x75x6mm Mild steel with clear height of not less than 2.1 m from the ground level to the bottom of the Sign board & 60 cm below ground level. The sign post should be painted with one coat of red oxide paint and two coats of synthetic enamel paint of black and white colour with bands of 30 cm height, firmly fixed to the ground by means of foundation with M 20 grade cement, concrete foundation size of 45 cm x 45 cm x 60 cm including cost & conveyance of all materials, equipment, machinery & Labour with all leads and lifts for satisfactory completion of the work as directed by Engineer incharge.							
	Unit	No						
	Roads		20	--	--	--	20.00	
	Total						**20.00**	No
18	**Tubular Marker / Spring post 700 mm (Flexible Bollards)** - Providing Tubular marker made up of Polyurethane used to divide opposing lanes of road users shall be fixible in nature. Tubular marker having height 700 mm shall be having 75 mm Reboundable work zone retroreflective sheeting as per ASTM 4956 S2 (Application of Tubular Marker shall be done as per IRC SP 55-2014)							
	Unit	No						
	Roads		40	--	--	--	40.00	
	Total						**40.00**	No
	NON SR ITEMS							
19	Providing and supplying of sadarahalli grey **granite bollards** of height 0.9 m and width of 0.45m width, cut to required shape including cost of all materials, labour, transportation etc							
	Unit	Nos						
							40.00	Nos
	Civil Sub Total							

SP ROAD JUNCTION ELECTRICAL ESTIMATE

SL	DESCRIPTION		N	L	B	D	Qty	Unit
	POLE LIGHT							
20	Supply and erection of 14 Feet Height Street Light Pole 14 Feet Height Street Light Pole on suitable cement concrete foundation with 2.5 Feet height dia 95 mm cast iron decorative round pedestal as per design weighing not less than 37Kgs, the pedestal shall be fitted with Class 'C' G.I.Pipe 7 Feet height 75 mm outer dia and 7 feet height top pieceouter dia of 65 mm fixed by measure of threading/welding/coupling complete. (excluding foundation).							
							25.00	Nos
	POLE LIGHT FIXTURE							

21	Supply of LED pole mounting type post top lantern with pressure die cast aluminium housing body for optimal thermal dissipation. Lamp compartment comprising of anti glare clear diffuser with Injection moulded polycarbonate/ clear glass material, delivering superior light outputRated life Burning Hrs 50000 hr@ Lumen Maintenance of 70%, CCT > 5500K, IP 66 optical and electrical compartment & impact resistance of complete luminaire >IK08. Power Factor>0.9 with mains, Surge Protection- Min 5KV along with Over voltage/Overload, short circuit/ miss-wiring protection. Compatible for pole mounting with outer dia of 40mm to 50mm. Universal Voltage driver to operate wide voltage range from 100V to 270V 50/60Hz application. Compliance to IS 10322/1 EC 60598, LM 79 & LM 80 Adherence with RoHS. UL approved MCPCB LED Efficiency>1301m/w, nominal CRI >75. Luminaire manufacturer should have in- house facility accredited by NABL/CPRI & any Government certified agency & Design & Development facility certified by ISO 9001:2008. Housing with supplier word mark /name shall be Engraved / Embossing on the die cast housing/ Body part Warranty of		
	LED Post Top Lantern with 45 W		
		25.00	Nos
	FIXING CHARGES		
22	Fixing charges of post top/ Gate/ Garden fitting /LED on the existing CI / GI or any other pipe using required size of reducer, wiring using suitable wires		
		25.00	Nos
	CONDUIT & ITS ACCESSORIES		
23	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply, including all CPVC plain & brass threaded fittings, including fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and testing of joints complete as per direction of Engineer in Charge. Internal work - Exposed on wall.50 mm nominal dia Pipes		
	Total	620.00	Mtrs
	L.T. U.G. CABLES		
24	LT UG Cable. Heat shrinkable Straight Through Joint. 2.5 to 25 Sqmm		
		620.00	Mtrs
25	4 Core, 16 Sqmm, 30 No GI Wires (1.6 mm)		
		620.00	Mtrs
26	LABOUR for Aerial Bunched Conductor & Accessories. Stringing of 11 kV grade Aerial Bunched 3 Core cable of XLPE insulation of size 3x95 Sqmm + 1x70 Sqmm with Insulated		
		1240.00	Mtrs
27	Digging of Pit 1.8 Mtr depth for errection of 9 to 10 Mtr Long Steel/RCC/PSCC supports as per approved Drawing.		
	Hard Rock (By Chizling and/Or Wedging)		
		20.00	Mtrs
	WIRES & CABLES		

28	Supplying and drawing Flexible Multicore Cable manufactured with electrolytic grade flexible copper with low conductor confirming to IS:8130-1984 and (Virgin) PVC insulation sheathed suitable for working voltage upto 1100Volts as per IS-694:1990		
	3C X 4Sq.mm Copper Flexible		
		620.00	Mtrs
29	Supplying fixing and wiring earth electrode for grounding of lifts, transformers, DG sets etc. using 40 mm dia 2.9 mm thick 2.5m long GI pipe with GI funnel with mesh and suitable size reducer fixed on the top of the earth electrode.The funnel should be enclosed in a CC chamber of 400x400x400 mm with a cast iron cover. The earth electrode shall have staggered holes of 12 mm dia and the electrode should be covered 150 mm all-round with alternate layers of salt and charcoal from the bottom of the CC chamber. The connection from the electrode is to be		
	8 SWG GI Wire		
		50.00	Mtrs
30	Supplying and running of GI/Copper strips for grounding connections, using necessary fixing materials as required.		
	25mm x 3mm GI Patti		
		50.00	Rmt
31	Supplying and drawing 3 core flat PVC sheathed submersible pump cable manufactured with electrolytic grade copper with flexible copper with low resistance conductor confirming to IS:8130-1984 and virgin grade PVC insulation and powder coating extruded PVC sheathed suitable for working voltage upto 1100Volts as per IS-694:1990.		
	Submersible Flat Cable 3C X 4 sqm		
		110.00	Rmt
	CONTROL PANEL		
32	Supplying and fixing Moulded Case Circuit Breaker (MCCB) over the existing wood/panel board using necessary screws, bolts, nuts, necessary phase separators, handle and wiring complete. Protection of Overload and Short circuit with thermal Magnetic/Micro processor release and Earth Fault as per IS 13947. (Icu = Ics)		
	THREE POLE		
	200Amps 36kA.		
		1.00	EACH
33	Supplying and fixing miniature circuit breakers on existing MCB distribution boards using necessary fixing materials and 'C' Type curve, indicator ON/OFF, energy cross-3 with Short circuit breaking capacity of 10K and complete wiring as required confirming to IEC 60898.		
	6-32Amps TPN		
		2.00	EACH
34	Supplying fully automatic star-delta starter Unit push button type with suitable wires, 3 contactors, one adjustable thermal timer mounted on a common base plate held in steel enclosure for use on 400/440 volts 3 phase and wired after fixing to the existing wooden board for meter		
	Upto 12.5 HP		

		2.00	EACH
35	For Distribution Transformer Centre (DTC) MS Box for housing the ETV Meter 3 Phase 4 Wire 5 Amps, with associated LT CT 0.5 Accuracy Class, ring type, with wiring Clamps, B&N and all other accessories required. (EXCLUDING ETV METER) With CT Ratio 800/5 for 500 kVA DTC		
		2.00	EACH
36	Supplying and fixing of Modular MCB Devices (Tripper) With Breaking capacity of 6kA.		
	16 - 32 A SP		
		2.00	EACH
	NON SR ITEMS		
37	Supply and Installation of 50 watt UPLIGHTERS LED light with 2 way connector for each light. Technical Specification • Luminaire made up of die cast dark grey powder coated aluminium alloy with non corrosive SS fasteners with low copper content. • Luminaire prewired with LED driver and Suitable for operation on 240V, 50Hz single phase ac supply. IP67 , mechanical resistance IK08	25.00	EACH
38	Supply and Installation of 10watt focus WALL LED light with 2 way connector for each light. Technical Specification • Luminaire made up of die cast dark grey powder coated aluminium alloy with non corrosive SS fasteners with low copper content. • Luminaire prewired with LED driver and Suitable for operation on 240V, 50Hz single phase ac supply. IP67 , mechanical resistance IK08	25.00	EACH

BRUHAT BANGALORE MAHANAGARA PALIKE

Name of the Work : Improvements to 20 numbers major junctions with greenery to improve air quality around the junction

MADHAVAN CIRCLE CIVIL WORKS ESTIMATE

SL no	Description of work	Unit	Nos.	Dimension			Quantity	Unit
				Length	Breadth	Depth		
1	**Dismantling of existing structures** like culverts, bridges, retaining walls and other structure comprising of masonry, cement concrete, wood work, steel work, including T&P and scaffolding wherever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts complete as per specifications. iiv) **Dismantling Stone Masonry**							
	2.10.B. **Rubble stone masonry** in cement mortar							
	Basic Rate Rs.	₹ 610.00						
	Add Area Weightage 10%	₹ 61.00						
	Total Rate in Rs.	**₹ 671.00**						
	Unit	Cum						
	Stone wall in the centre island		1	32.00	0.60	1.20	23.04	
	Total						**23.04**	Cum
2	**Earth work excavation** for Foundation by Mechanical means depth upto 1.50m, as per drawing and technical specifications, including setting out, shoring, strutting, barricading, caution lights, including cost of explosives, dressing of excavated surfaces, disposing off or levelling the excavated stuff or sorting & stacking the selected stuff for reuse in a radius of 50 m and lift upto 1.5 m including cost of labour, blasting materials, tools, usage of Machinery & all other appurtenaces required to complete the work complete.							
	In Hard Rock (requiring blasting) Depth upto 1.50m							
	Basic Rate Rs.	₹ 554.00						
	Add Area Weightage 10%	₹ 55.40						
	Total Rate in Rs.	**₹ 609.40**						
	Unit	Cum						
	For wall		1	32.00	0.60	1.20	23.04	
	For Footpath Kerb		1	73.00	0.45	0.30	9.86	
	For Island Kerb		1	32.00	0.45	0.30	4.32	
	For Sump		1	2.50	2.50	2.00	12.50	
	Total						**49.72**	Cum
3	Loading and Unloading of Stone Boulder/Stone aggregates/Sand/Kankar/Moorum. (Tipper							
	Unit	Cum						
	Demolished works						**72.76**	
	Total						**72.76**	Cum

4	Providing and laying in position **Cement Concrete** for levelling course for all works in foundation. The granite/trap/basalt crushed graded coarse aggregates and fine aggregates as per relevant IS Codesmachine mixed, laid in layers not exceeding 150 mm thickness, well compacted using plate vibrators, including all lead & lifts, cost of all materials of quality, labour, Usage charges of machinery, curing, and all the other appurtenances required to complete the work as per technical specifications.							
	Mix **1:3:6** Using **20 mm** nominal size graded crushed coarse aggregates							
	Unit	Cum						
	For Footpath Kerb		1	73.00	0.45	0.15	4.93	
	For Island Kerb		1	32.00	0.45	0.15	2.16	
	For Footpath flooring		1	210.00		0.15	31.50	
	For Sump		1	2.50	2.50	0.15	0.94	
	Total						**39.53**	Cum
5	Providing, laying, spreading and compacting graded stone aggregate to **wet mix macadam** specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver/grader in sub-base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density. MORTH Specification No. 406							
	Unit	Cum						
	For Footpath Kerb		1	73.00	0.45	0.15	4.93	
	For Island Kerb		1	32.00	0.45	0.15	2.16	
	For Footpath flooring		1	210.00		0.15	31.50	
	For Sump		1	2.50	2.50	0.15	0.94	
	Total						**39.53**	Cum
6	**Ready Mix Concrete** (RMC) with Cement & Cementitious Materials. Providing and laying in position Ready Mixed or Batch Mixed concrete as per IS 10262 mix design procedure for Cement Concrete works in all types of Structures other than Road works, using coarse aggregate and fine aggregate derived from natural sources, Ordinary Portland Cement (OPC) @ 75% & GGBS @ 25% proportion, admixtures to accelerate / retard setting of concrete, to improve durability and workability without impairing strength; including pumping of concrete to site of laying, curing, carriage for all leads; but excluding the cost of centering, shuttering, finishing and reinforcement as per direction of the Engineer-in-charge.							
	Unit	Cum						
	For Sump slab		1	2.50	2.50	0.15	0.94	
	Total						**0.94**	Cum
7	Steel Fabrication. Supplying, fitting and placing TMT FE 550 / 550D **Steel Reinforcement** including cost of all materials, machinery, labour, cleaning, straightening, cutting, bending, hooking, laping/welding joints, tying with binding wire / soft annealed steel wire and other ancilary operations complete as per drawing and technical specification.All other type of structures (PgNo - 18, Item No - 2.11.h. of Vol I PWD							
	Unit	Tonne						

	Considering 80kg/Cum for item No.6	(0.94)*0.08					**0.08**	Tonne
8	Providing **Coursed rubble masonry** (first sort) with hard stone in foundation and plinth with Cement mortar 1:6 (1 cement : 6 coarse sand).							
	Unit	Cum						
	For wall 1		1	28.00	0.60	0.90	15.12	
	For wall 2		1	24.00	0.60	0.90	12.96	
	For wall 3		1	18.00	0.60	0.90	9.72	
	For Sump wall		1	2.50	0.60	0.90	1.35	
	Total						**39.15**	Cum
9	Providing **Brick work** with common burnt clay Non Modular bricks of class designation 3.5 in superstructure above plinth level in all shapes and sizes in Cement mortar 1:6 (1 cement : 6 coarse sand) including cost of all materials, labour, scaffolding and usage charges of machinery & other incidental charges complete as per the direction of engineer incharge of work.							
	Unit	Cum						
	For wall 1		1	28.00	0.30	0.30	2.52	
	For wall 2		1	24.00	0.45	1.50	16.20	
	For wall 3		1	18.00	0.45	1.50	12.15	
	For Sump wall		4	2.50	0.30	2.00	6.00	
	Total						**36.87**	Cum

10	Providing **15 mm cement plaster** on rough side of single or half brick wall finished with a floating coat of neat cement of mix 1:3 (1 cement: 3 fine sand) including rounding off corners wherever required smooth rendering, providing and removing scaffolding, including cost of materials, labour, curing complete as per specifications and as per directions of Engineer-in-charge.							
	Unit	Sqm						
	For wall 1		2	28.00	--	0.30	16.80	
	For wall 2		2	24.00	--	1.50	72.00	
	For wall 3		2	18.00	--	1.50	54.00	
	For Sump wall		4	2.50	--	2.00	20.00	
	Total						**142.80**	Sqm
11	Providing & Applying Crystalline **waterproofing** slurry coat RCC structure like Retaining wall, Underground tank. The material having chemical resistance properties, seals shrinkage cracks up to 0.4 mm width, capable of preventing water dampness & seepages, Water permeability is Nil confirms to BS EN 12390 Part 8: 2000. Powder to water mixed at a ratio (5:2) 5 parts powder and 2 parts water, applied @ 1.5kg/m2 in 2 coats to achieve 1.0mm DFT on a cleaned surface free from all loose materials etc., complete. The finished cost to include surface preparation completely as per specification.							
	Unit	Sqm						

	For wall 1		1	28.00	--	0.30	8.40	
	For wall 2		2	24.00	--	1.50	72.00	
	For wall 3		1	18.00	--	1.50	27.00	
	For Sump wall		4	2.50	--	2.00	20.00	
	Total						**127.40**	Sqm
12	Providing and laying **60mm** thick factory made precast M -30 grade **Cement Concrete Paver Block** as per IRC SP 63:2018 & IS 15658 for Cycle Tracks & Pedestrian Footpaths of approved shape and colour, laid in required pattern and including over 30mm thick compacted bed of coarse sand, filling the joints with fine sand etc. all complete as per the direction of Engineer-in charge. (WMM/WBM Base to							
	Unit	Sqm						
	For Footpath flooring		1	210.00		--	210.00	
	Total						**210.00**	Sqm
13	Providing and laying **Black Lapotra Granite** stone flooring in linear as well as curvilinear portions of the building all complete as per the architectural drawings with 18mm thick stone slab over 20 mm (average) thick base of cement mortar 1:4 (1 cement : 4 coarse sand) laid and jointed with cement slurry and pointing with white cement slurry admixed with pigment of matching shade including rubbing , curing and polishing etc. all complete as specified and as directed by the Engineer-in-charge.							
	Unit	Sqm						
	For wall 1 cladding		1	28.00	--	0.30	8.40	
	For wall 2 cladding		2	24.00	--	1.50	72.00	
	For wall 3 cladding		1	18.00	--	1.50	27.00	
	For fountain 1 base		1	15.00		--	15.00	
	For fountain 2 base		2	13.00		--	26.00	
	For wall 1 coping		1	28.00	--	0.30	8.40	
	For wall 2 coping		2	24.00	--	0.30	14.40	
	For wall 3 coping		1	18.00	--	0.30	5.40	
	Total						**176.60**	Sqm
14	Supplying and fixing M15 grade precast **cement concrete Kerb stone**s for Roadway, Sidewalls and gutters fixed with CM 1:3 fixed and finsihed in line as per direction of Engineer in charge. (The cost of PCC shall be paid extra)							
	600 x 300 x 150 mm size							
	Unit	M						
	For Footpath Kerb		1	73.00	--	--	73.00	
	For Island Kerb		1	32.00	--	--	32.00	
	Total						**105.00**	M
15	Providing and applying tack coat with **RS1 Bituminous Emulsion** using emulsion pressure distributor at the rate of 0.20 kg/m2 on the prepared bituminous surface cleaned with mechanical broom							
	Unit	Sqm						

	For HRPC		2	10.00	8.00	--	160.00	
	Total						**160.00**	Sqm
16	Providing and laying **Bituminous Concrete** with 100 TPH capacity hot mix plant batch type using crushed aggregates of specified grading, premixed with bituminous binder VG-30, @ 5.4 per cent of mix and filler, transporting the hot mix to work site, laying with mechanical paver finisher to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH specification							
	Unit	Cum						
	For HRPC							
	Below Cobble stone							
			2	10.00	3.00	0.05	3.00	
	For Slopes							
			4	10.00	3.00	0.19	22.50	
						0.5 x 2.5 x 0.15		
	Total						**25.50**	Cum
17	Providing and laying 100mm thick factory made **precast M - 40 grade Cement Concrete Paver Block** as per IRC SP 63:2018 & IS 15658 for Commercial Traffic Axle load repetitions more than 10MSA upto 20MSA for Industrial Streets, Bus & Truck parking of approved shape and colour, laid in required pattern an including over 40mm thick compacted bed of coarse sand, filling the joints with fine sand etc. all complete as per the direction of Engineer-							
	Unit	Sqm						
	For HRPC		2	10.00	3.00	--	60.00	
	Total						**60.00**	Sqm
18	Providing and laying of **hot applied thermoplastic compound** 2.5 mm thick including reflectorising glass beads @ 250 g/m2 area, thickness of 2.5 mm is exclusive of surface applied glass beads as per IRC:35:2015.The finished surface to be level, uniform and free from							
	Unit	Sqm						
	For HRPC Slopes		4	2.50	0.50	--	5.00	
	For Stop Lane		20	7.00	0.25	--	35.00	
	Zebra Crossings		90	4.00	0.50	--	180.00	
	End Lane		1	862.00	0.25	--	215.50	
	Divider lane		1	743.00	0.25	--	185.75	
	For pattern on the road center		1	1595.00		--	797.50	
	Total						**1418.75**	Sqm

19	Supplying and Fixing of **Molded Shank Raised Pavement Markers / Cat's Eye** made of polycarbonate and ABS moulded body and reflective panels with micro prismatic lens capable of providing total internal reflection of the light entering the lens face and shall support a load of 16000 kg tested in accordance to ASTM D 4280 Type H and complying to Specifications of Category A of MORTH Circular No RW/NH/33023/10-97 DO III Dt 11.06. 1997. The height, width and length shall not exceed 50 mm, 100 mm and 102 +/- 2 mm and with minimum reflective area of 13 cm2 on each side and the slope to the base shall be 35 +/- 5 degree. The strength of detachment of the integrated cylindrical shanks, (of diameter not less than 19 +/- 2 mm and height not less than 30+/- 2 mm) from the body is to be a minimum value of 500 Kg. Fixing will be by drilling holes on the road for the shanks to go inside, without nails and using epoxy resin based adhesive as per manufacturer's recommendation and complete as directed by the engineer.The contractor shall submit a two							
	Unit	Sqm						
	Roads		120	--	--	--	120.00	
	Total						**120.00**	Sqm
20	**Retro-Reflectorised Traffic Signs** - Providing and fixing of retro- reflectorised cautionary, mandatory and informatory sign as per IRC:67:2022 made of Class C Type XI retro reflective sheeting fixed over 2 mm thick aluminium sheeting vide clause 801.3, 3mm/4mm thick Aluminium composite material sheet depending on the size of the sign fixed over the back support frame of min 25 x 25 x 3mm angle mounted on a mild steel circular pipe 65 NB, 3.2 mm thickness firmly fixed to the ground by means of properly designed foundation with M25 grade cement concrete 45 cm x 45 cm x 60 cm, 60 cm below ground level as per approved drawing.The sign shall be maintained as per section 12 of IRC:67:2022. **90 cm**							
	Unit	Sqm						
	Roads		60	--	--	--	60.00	
	Total						**60.00**	Sqm
21	**Road Delineators** - Supplying and installation of delineators (road way indicators, hazard markers, object markers), 80-100 cm high above ground level, painted black and white in 15 cm wide strips, fitted with 80 x 100 mm rectangular or 75 mm dia circular reflectorised panels at the top, buried or pressed into the ground and conforming to IRC-79-2019 and the							
	Unit	Each						
	Roads		50	--	--	--	50.00	
	Total						**50.00**	Each

22	**Chevron Boards** - Supply and installation of retro- reflective **Chevron signboards of 600x450mm** made out of cube corner micro prismatic grade sheeting confirming to Type XI standards of IRC:67:2022 & ASTM D 4956-09 specification & fixed over 3 mm thick Aluminium Composite Panel sheet having minimum 0.30 mm thick aluminum skin on both sides & fixed over back support frame of 25x25x 3mm MS angle frame. Supported on 75 mm dia OR 75x75x6mm Mild steel with clear height of not less than 2.1 m from the ground level to the bottom of the Sign board & 60 cm below ground level. The sign post should be painted with one coat of red oxide paint and two coats of synthetic enamel paint of black and white colour with bands of 30 cm height, firmly fixed to the ground by means of foundation with M 20 grade cement, concrete foundation size of 45 cm x 45 cm x 60 cm including cost &		

	Unit	No						
	Roads		20	--	--	--	20.00	
	Total						**20.00**	No
23	**Tubular Marker / Spring post 700 mm (Flexible Bollards)** - Providing Tubular marker made up of Polyurethane used to divide opposing lanes of road users shall be fixible in nature. Tubular marker having height 700 mm shall be having 75 mm Reboundable work zone retroreflective sheeting as per ASTM 4956 S2 (Application of Tubular Marker shall be done as per IRC SP 55-2014)							
	Unit	No						
	Roads		40	--	--	--	40.00	
	Total						**40.00**	No
	NON SR ITEMS							
24	Contructing seating of width 0.6m as per Unit drawings and design including back rest and all finishes as suggested by landscape architect.(Size 2.4m x 0.6m)							
	Unit	NOS						
	Seating		1	0.00			0.00	mtrs
							0.00	NOS

25	Providing and laying of **Stone based Grit plaster** of stone aggregates size of 6mm to 10mm mixed with15mm thick cement over existing cement concrete bed, including cost of all materials, washing, one coat of polishing, labour, curing, transportation complete as per specifications directed by Engineer-in-charge of the work.							
	Unit	Sqm						
	Center island Retaining wall cladding		1	55.00	--	0.75	41.25	
	Center island Retaining wall coping		1	55.00	--	0.60	33.00	
	For Seating		3	10.00	0.60	--	18.00	
	Total						**0.00**	Sqm
26	Providing and supplying of sadarahalli grey **granite bollards** of height 0.9 m and width of 0.45m width, cut to required shape including cost of all materials, labour, transportation etc							
	Unit	Nos						
							45.00	Nos
	Civil Sub Total							

MADHAVAN CIRCLE ELECTRICAL ESTIMATE

SL No	DESCRIPTION		N	L	B	D	Qty	Unit
	POLE LIGHT							

27	Supply and erection of 14 Feet Height Street Light Pole 14 Feet Height Street Light Pole on suitable cement concrete foundation with 2.5 Feet height dia 95 mm cast iron decorative round pedestal as per design weighing not less than 37Kgs, the pedestal shall be fitted with Class 'C' G.I.Pipe 7 Feet height 75 mm outer dia and 7 feet height top pieceouter dia of 65 mm fixed by measure of threading/welding/coupling complete. (excluding foundation).		
		45.00	Nos
	POLE LIGHT FIXTURE		
28	Supply of LED pole mounting type post top lantern with pressure die cast aluminium housing body for optimal thermal dissipation. Lamp compartment comprising of anti glare clear diffuser with Injection moulded polycarbonate/ clear glass material, delivering superior light outputRated life Burning Hrs 50000 hr@ Lumen Maintenance of 70%, CCT > 5500K, IP 66 optical and electrical compartment & impact resistance of complete luminaire >IK08. Power Factor>0.9 with mains, Surge Protection- Min 5KV along with Over voltage/Overload, short circuit/ miss-wiring protection. Compatible for pole mounting with outer dia of 40mm to 50mm. Universal Voltage driver to operate wide voltage range from 100V to 270V 50/60Hz application. Compliance to IS 10322/1 EC 60598, LM 79 & LM 80 Adherence with RoHS. UL approved MCPCB LED Efficiency>1301m/w, nominal CRI >75. Luminaire manufacturer should have in- house facility accredited by NABL/CPRI & any Government certified agency & Design & Development facility certified by ISO 9001:2008. Housing with supplier word mark /name shall be Engraved / Embossing on the die cast housing/ Body		
	LED Post Top Lantern with 45 W		
		45.00	Nos
	FIXING CHARGES		
29	Fixing charges of post top/ Gate/ Garden fitting /LED on the existing CI / GI or any other pipe using required size of reducer, wiring using suitable wires		
		45.00	Nos
	CONDUIT & ITS ACCESSORIES		
30	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply, including all CPVC plain & brass threaded fittings, including fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and testing of joints complete as per direction of Engineer in Charge. Internal work - Exposed		
	Total	210.00	Mtrs
	L.T. U.G. CABLES		
31	LT UG Cable. Heat shrinkable Straight Through Joint. 2.5 to 25 Sqmm		
		210.00	Mtrs
32	4 Core, 16 Sqmm, 30 No GI Wires (1.6 mm)		
		210.00	Mtrs
33	LABOUR for Aerial Bunched Conductor & Accessories. Stringing of 11 kV grade Aerial Bunched 3 Core cable of XLPE insulation of size 3x95 Sqmm + 1x70 Sqmm with Insulated		
		420.00	Mtrs

34	Digging of Pit 1.8 Mtr depth for errection of 9 to 10 Mtr Long Steel/RCC/PSCC supports as per approved Drawing.		
	Hard Rock (By Chizling and/Or Wedging)		
		20.00	Mtrs
	WIRES & CABLES		
35	Supplying and drawing Flexible Multicore Cable manufactured with electrolytic grade flexible copper with low conductor confirming to IS:8130-1984 and (Virgin) PVC insulation sheathed suitable for working voltage upto 1100Volts as per IS-694:1990		
	3C X 4Sq.mm Copper Flexible		
		110.00	Mtrs
36	Supplying fixing and wiring earth electrode for grounding of lifts, transformers, DG sets etc. using 40 mm dia 2.9 mm thick 2.5m long GI pipe with GI funnel with mesh and suitable size reducer fixed on the top of the earth electrode.The funnel should be enclosed in a CC chamber of 400x400x400 mm with a cast iron cover. The earth electrode shall have staggered holes of 12 mm dia and the electrode should be covered 150 mm all-round with alternate layers of salt and charcoal from the bottom of the CC chamber. The connection from the		
	8 SWG GI Wire		
		90.00	Mtrs
37	Supplying and running of GI/Copper strips for grounding connections, using necessary fixing materials as required.		
	25mm x 3mm GI Patti		
		50.00	Rmt
38	Supplying and drawing 3 core flat PVC sheathed submersible pump cable manufactured with electrolytic grade copper with flexible copper with low resistance conductor confirming to IS:8130-1984 and virgin grade PVC insulation and powder coating extruded PVC sheathed suitable for working voltage upto 1100Volts as per IS-694:1990.		
	Submersible Flat Cable 3C X 4 sqm		
		110.00	Rmt
	CONTROL PANEL		
39	Supplying and fixing Moulded Case Circuit Breaker (MCCB) over the existing wood/panel board using necessary screws, bolts, nuts, necessary phase separators, handle and wiring complete. Protection of Overload and Short circuit with thermal Magnetic/Micro processor release and Earth Fault as per IS 13947. (Icu = Ics)		
	THREE POLE		
	200Amps 36kA.		
		1.00	EACH
40	Supplying and fixing miniature circuit breakers on existing MCB distribution boards using necessary fixing materials and 'C' Type curve, indicator ON/OFF, energy cross-3 with Short circuit breaking capacity of 10K and complete wiring as required confirming to IEC 60898.		
	6-32Amps TPN		
		2.00	EACH

41	Supplying fully automatic star-delta starter Unit push button type with suitable wires, 3 contactors, one adjustable thermal timer mounted on a common base plate held in steel enclosure for use on 400/440 volts 3 phase and wired after fixing to the existing wooden board for meter		
	Upto 12.5 HP		
		2.00	EACH
42	For Distribution Transformer Centre (DTC) MS Box for housing the ETV Meter 3 Phase 4 Wire 5 Amps, with associated LT CT 0.5 Accuracy Class, ring type, with wiring Clamps, B&N and all other accessories required. (EXCLUDING ETV METER) With CT Ratio 800/5 for 500		
		2.00	EACH
43	Supplying and fixing of Modular MCB Devices (Tripper) With Breaking capacity of 6kA.		
	16 - 32 A SP		
		2.00	EACH
	NON SR ITEMS		
44	Supply and Installation of 50 watt UPLIGHTERS LED light with 2 way connector for each light. Technical Specification • Luminaire made up of die cast dark grey powder coated aluminium alloy with non corrosive SS fasteners with low copper content. • Luminaire prewired with LED driver and Suitable for operation on 240V, 50Hz single phase ac supply. IP67 , mechanical resistance IK08	25.00	EACH
45	Supply and Installation of 10watt focus WALL LED light with 2 way connector for each light. Technical Specification • Luminaire made up of die cast dark grey powder coated aluminium alloy with non corrosive SS fasteners with low copper content. • Luminaire prewired with LED driver and Suitable for operation on 240V, 50Hz single phase ac supply. IP67 , mechanical resistance IK08	25.00	EACH
46	Supply ,installation, testing and commissioning of Nozzle mounted 18W/12V LED RGB Underwater LED Light fitting in IP 68 standard with SS fittings & accessories to fix out the LED lights	24.00	EACH

BRUHAT BANGALORE MAHANAGARA PALIKE

Name of the Work : Improvements to 20 numbers major junctions with greenery to improve air quality around the junction

NARRAINSAWMY MUDALIAR CIRCLE (ULSOOR 1) CIVIL WORKS ESTIMATE

SL no	Description of work	Unit	Nos.	Dimension			Quantity	Unit
				Length	Breadth	Depth		
1	**Earth work excavation** for Foundation by Mechanical means depth upto 1.50m, as per drawing and technical specifications, including setting out, shoring, strutting, barricading, caution lights, including cost of explosives, dressing of excavated surfaces, disposing off or levelling the excavated stuff or sorting & stacking the selected stuff for reuse in a radius of 50 m and lift upto 1.5 m including cost of labour, blasting materials, tools, usage of Machinery & all other appurtenaces required to complete the work complete.							
	In Hard Rock (requiring blasting) Depth upto 1.50m							
	Unit	Cum						
	For Footpath Kerb		1	92.00	0.45	0.30	12.42	
	For Island Kerb		1	116.00	0.45	0.30	15.66	
	For Pole Lights		12.00	0.60	0.60	0.60	2.59	
	Total						**30.67**	Cum
2	Providing and laying in position **Cement Concrete** for levelling course for all works in foundation. The granite/trap/basalt crushed graded coarse aggregates and fine aggregates as per relevant IS Codesmachine mixed, laid in layers not exceeding 150 mm thickness, well compacted using plate vibrators, including all lead & lifts, cost of all materials of quality, labour, Usage charges of machinery, curing, and all the other appurtenances required to complete the work as per technical specifications.							
	Mix **1:3:6** Using **20 mm** nominal size graded crushed coarse aggregates							
	Unit	Cum						
	For Footpath Kerb		1	92.00	0.45	0.15	6.21	
	For Island Kerb		1	116.00	0.45	0.15	7.83	
	For Footpath flooring		1	65.00		0.15	9.75	
	For Island flooring		1	38.00		0.15	5.70	
	For Pole Lights		12.00	0.60	0.60	0.60	2.59	
	Total						**32.08**	Cum

3	Providing, laying, spreading and compacting graded stone aggregate to **wet mix macadam** specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver/grader in sub-base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density. MORTH Specification No. 406							
	Unit	Cum						
	For Footpath Kerb		1	92.00	0.45	0.15	6.21	
	For Island Kerb		1	116.00	0.45	0.15	7.83	
	For Footpath flooring		1	65.00		0.15	9.75	

	For Island flooring		1	38.00		0.15	5.70	
	Total						**23.79**	Cum
1	Providing and laying **Black Lapotra Granite** stone flooring in linear as well as curvilinear portions of the building all complete as per the architectural drawings with 18mm thick stone slab over 20 mm (average) thick base of cement mortar 1:4 (1 cement : 4 coarse sand) laid and jointed with cement slurry and pointing with white cement slurry admixed with pigment of matching shade including rubbing , curing and polishing etc. all complete as specified and as directed by the Engineer-in-charge.							
	Unit	Sqm						
	Cladding for Centre Island		1	55.00	--	0.90	49.50	
	Coping for Centre Island		1	55.00	--	0.60	33.00	
	Total						**82.50**	Sqm
4	Providing and laying **60mm** thick factory made precast M -30 grade **Cement Concrete Paver Block** as per IRC SP 63:2018 & IS 15658 for Cycle Tracks & Pedestrian Footpaths of approved shape and colour, laid in required pattern and including over 30mm thick compacted bed of coarse sand, filling the joints with fine sand etc. all complete as per the direction of Engineer-in charge. (WMM/WBM Base to be							
	Unit	Sqm						
	For Footpath flooring		1	65.00		--	65.00	
	For Island flooring		1	38.00		--	38.00	
	Total						**103.00**	Sqm
5	Supplying and fixing M15 grade precast **cement concrete Kerb stone**s for Roadway, Sidewalls and gutters fixed with CM 1:3 fixed and finsihed in line as per direction of Engineer in charge. (The cost of PCC shall be paid extra)							
	600 x 300 x 150 mm size							
	Unit	M						
	For Footpath Kerb		1	92.00	--	--	92.00	
	For Island Kerb		1	116.00	--	--	116.00	
	Total						**208.00**	M
6	Providing and applying tack coat with **RS1 Bituminous Emulsion** using emulsion pressure distributor at the rate of 0.20 kg/m2 on the prepared bituminous surface cleaned with mechanical broom							
	Unit	Sqm						
	For HRPC		4	8.00	8.00	--	256.00	
	Total						**256.00**	Sqm
7	Providing and laying **Bituminous Concrete** with 100 TPH capacity hot mix plant batch type using crushed aggregates of specified grading, premixed with bituminous binder VG-30, @ 5.4 per cent of mix and filler, transporting the hot mix to work site, laying with mechanical paver finisher to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH specification clause No.							

	Unit	Cum						
	For HRPC							
	Below Cobble stone							
			4	8.00	3.00	0.05	4.80	
	For Slopes							
			8	8.00	3.00	0.19	36.00	
					0.5 x 2.5 x 0.15			
	Total						**40.80**	Cum
8	Providing and laying 100mm thick factory made **precast M - 40 grade Cement Concrete Paver Block** as per IRC SP 63:2018 & IS 15658 for Commercial Traffic Axle load repetitions more than 10MSA upto 20MSA for Industrial Streets, Bus & Truck parking of approved shape and colour, laid in required pattern an including over 40mm thick compacted bed of coarse sand, filling the joints with fine sand etc. all complete as per the direction of Engineer-in-charge.							
	Unit	Sqm						
	For HRPC		4	8.00	3.00	--	96.00	
	Total						**96.00**	Sqm
9	Providing and laying of **hot applied thermoplastic compound** 2.5 mm thick including reflectorising glass beads @ 250 g/m2 area, thickness of 2.5 mm is exclusive of surface applied glass beads as per IRC:35:2015.The finished surface to be level, uniform and free from streaks							
	Unit	Sqm						
	Zebra Crossings		90	4.00	0.50	--	180.00	
	End Lane		1	569.00	0.25	--	142.25	
	Divider lane		1	483.00	0.25	--	120.75	
	Total						**443.00**	Sqm
10	Supplying and Fixing of **Molded Shank Raised Pavement Markers / Cat's Eye** made of polycarbonate and ABS moulded body and reflective panels with micro prismatic lens capable of providing total internal reflection of the light entering the lens face and shall support a load of 16000 kg tested in accordance to ASTM D 4280 Type H and complying to Specifications of Category A of MORTH Circular No RW/NH/33023/10-97 DO III Dt 11.06. 1997. The height, width and length shall not exceed 50 mm, 100 mm and 102 +/- 2 mm and with minimum reflective area of 13 cm2 on each side and the slope to the base shall be 35 +/- 5 degree. The strength of detachment of the integrated cylindrical shanks, (of diameter not less than 19 +/- 2 mm and height not less than 30+/- 2 mm) from the body is to be a minimum value of 500 Kg. Fixing will be by drilling holes on the road for the shanks to go inside, without nails and using epoxy resin based adhesive as per manufacturer's recommendation and complete as directed by the engineer The contractor shall submit a two year warranty for satisfactory field							
	Unit	Sqm						
	Roads		120	--	--	--	120.00	
	Total						**120.00**	Sqm

11	**Retro-Reflectorised Traffic Signs** - Providing and fixing of retro- reflectorised cautionary, mandatory and informatory sign as per IRC:67:2022 made of Class C Type XI retro reflective sheeting fixed over 2 mm thick aluminium sheeting vide clause 801.3, 3mm/4mm thick Aluminium composite material sheet depending on the size of the sign fixed over the back support frame of min 25 x 25 x 3mm angle mounted on a mild steel circular pipe 65 NB, 3.2 mm thickness firmly fixed to the ground by means of properly designed foundation with M25 grade cement concrete 45 cm x 45 cm x 60 cm, 60 cm below ground level as per approved drawing.The sign shall be maintained as per section 12 of IRC:67:2022. **90 cm equilateral**							
	Unit	Sqm						
	Roads		40	--	--	--	40.00	
	Total						**40.00**	Sqm
12	**Road Delineators** - Supplying and installation of delineators (road way indicators, hazard markers, object markers), 80-100 cm high above ground level, painted black and white in 15 cm wide strips, fitted with 80 x 100 mm rectangular or 75 mm dia circular reflectorised panels at the top, buried or pressed into the ground and conforming to IRC-79-2019 and the							
	Unit	Each						
	Roads		40	--	--	--	40.00	
	Total						**40.00**	Each
13	**Chevron Boards** - Supply and installation of retro- reflective **Chevron signboards of 600x450mm** made out of cube corner micro prismatic grade sheeting confirming to Type XI standards of IRC:67:2022 & ASTM D 4956-09 specification & fixed over 3 mm thick Aluminium Composite Panel sheet having minimum 0.30 mm thick aluminum skin on both sides & fixed over back support frame of 25x25x 3mm MS angle frame. Supported on 75 mm dia OR 75x75x6mm Mild steel with clear height of not less than 2.1 m from the ground level to the bottom of the Sign board & 60 cm below ground level. The sign post should be painted with one coat of red oxide paint and two coats of synthetic enamel paint of black and white colour with bands of 30 cm height, firmly fixed to the ground by means of foundation with M 20 grade cement, concrete foundation size of 45 cm x 45 cm x 60 cm including cost &							
	Unit	No						
	Roads		20	--	--	--	20.00	
	Total						**20.00**	No
14	**Tubular Marker / Spring post 700 mm (Flexible Bollards)** - Providing Tubular marker made up of Polyurethane used to divide opposing lanes of road users shall be fixible in nature. Tubular marker having height 700 mm shall be having 75 mm Reboundable work zone retroreflective sheeting as per ASTM 4956 S2 (Application of Tubular Marker shall be done as							
	Unit	No						
	Roads		40	--	--	--	40.00	
	Total						**40.00**	No

	NON SR ITEMS		

15	Providing and supplying of sadarahalli grey **granite bollards** of height 0.9 m and width of 0.45m width, cut to required shape including cost of all materials, labour, transportation etc							
	Unit	Nos						
							60.00	Nos
	Civil Sub Total							

	NARRAINSAWMY MUDALIAR CIRCLE (ULSOOR 1) ELECTRICAL ESTIMATE							
SL	**DESCRIPTION**		**N**	**L**	**B**	**D**	**Qty**	**Unit**
	POLE LIGHT							
16	Supply and erection of 14 Feet Height Street Light Pole 14 Feet Height Street Light Pole on suitable cement concrete foundation with 2.5 Feet height dia 95 mm cast iron decorative round pedestal as per design weighing not less than 37Kgs, the pedestal shall be fitted with Class 'C' G.I.Pipe 7 Feet height 75 mm outer dia and 7 feet height top pieceouter dia of 65 mm fixed by measure of threading/welding/coupling complete. (excluding foundation).							
							12.00	Nos
	POLE LIGHT FIXTURE							
17	Supply of LED pole mounting type post top lantern with pressure die cast aluminium housing body for optimal thermal dissipation. Lamp compartment comprising of anti glare clear diffuser with Injection moulded polycarbonate/ clear glass material, delivering superior light outputRated life Burning Hrs 50000 hr@ Lumen Maintenance of 70%, CCT > 5500K, IP 66 optical and electrical compartment & impact resistance of complete luminaire >IK08. Power Factor>0.9 with mains, Surge Protection- Min 5KV along with Over voltage/Overload, short circuit/ miss-wiring protection. Compatible for pole mounting with outer dia of 40mm to 50mm. Universal Voltage driver to operate wide voltage range from 100V to 270V 50/60Hz application. Compliance to IS 10322/1 EC 60598, LM 79 & LM 80 Adherence with RoHS. UL approved MCPCB LED Efficiency>1301m/w, nominal CRI >75. Luminaire manufacturer should have in- house facility accredited by NABL/CPRI & any Government certified agency & Design & Development facility certified by ISO 9001:2008. Housing with supplier word mark /name shall be Engraved / Embossing on the die cast housing/ Body part Warranty of 2							
	LED Post Top Lantern with 45 W							
							12.00	Nos
	FIXING CHARGES							
18	Fixing charges of post top/ Gate/ Garden fitting /LED on the existing CI / GI or any other pipe using required size of reducer, wiring using suitable wires							
							12.00	Nos
	CONDUIT & ITS ACCESSORIES							
19	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply, including all CPVC plain & brass threaded fittings, including fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and testing of joints complete as per direction of Engineer in Charge. Internal work - Exposed							
	Total						380.00	Mtrs
							0.00	
	L.T. U.G. CABLES							

20	LT UG Cable. Heat shrinkable Straight Through Joint. 2.5 to 25 Sqmm		
		380.00	Mtrs
21	4 Core, 16 Sqmm, 30 No GI Wires (1.6 mm)		
		380.00	Mtrs
22	LABOUR for Aerial Bunched Conductor & Accessories. Stringing of 11 kV grade Aerial Bunched 3 Core cable of XLPE insulation of size 3x95 Sqmm + 1x70 Sqmm with Insulated		
		760.00	Mtrs
23	Digging of Pit 1.8 Mtr depth for errection of 9 to 10 Mtr Long Steel/RCC/PSCC supports as per approved Drawing.		
	Hard Rock (By Chizling and/Or Wedging)		
		20.00	Mtrs
	WIRES & CABLES		
24	Supplying and drawing Flexible Multicore Cable manufactured with electrolytic grade flexible copper with low conductor confirming to IS:8130-1984 and (Virgin) PVC insulation sheathed suitable for working voltage upto 1100Volts as per IS-694:1990		
	3C X 4Sq.mm Copper Flexible		
		620.00	Mtrs
25	Supplying fixing and wiring earth electrode for grounding of lifts, transformers, DG sets etc. using 40 mm dia 2.9 mm thick 2.5m long GI pipe with GI funnel with mesh and suitable size reducer fixed on the top of the earth electrode.The funnel should be enclosed in a CC chamber of 400x400x400 mm with a cast iron cover. The earth electrode shall have staggered holes of 12 mm dia and the electrode should be covered 150 mm all-round with alternate layers of salt and charcoal from the bottom of the CC chamber. The connection from the electrode is to be		
	8 SWG GI Wire		
		24.00	Mtrs
26	Supplying and running of GI/Copper strips for grounding connections, using necessary fixing materials as required.		
	25mm x 3mm GI Patti		
		50.00	Rmt
27	Supplying and drawing 3 core flat PVC sheathed submersible pump cable manufactured with electrolytic grade copper with flexible copper with low resistance conductor confirming to IS:8130-1984 and virgin grade PVC insulation and powder coating extruded PVC sheathed suitable for working voltage upto 1100Volts as per IS-694:1990.		
	Submersible Flat Cable 3C X 4 sqm		
		110.00	Rmt
	CONTROL PANEL		

28	Supplying and fixing Moulded Case Circuit Breaker (MCCB) over the existing wood/panel board using necessary screws, bolts, nuts, necessary phase separators, handle and wiring complete. Protection of Overload and Short circuit with thermal Magnetic/Micro processor release and Earth Fault as per IS 13947. (Icu = Ics)		
	THREE POLE		
	200Amps 36kA.		
		1.00	EACH
29	Supplying and fixing miniature circuit breakers on existing MCB distribution boards using necessary fixing materials and 'C' Type curve, indicator ON/OFF, energy cross-3 with Short circuit breaking capacity of 10K and complete wiring as required confirming to IEC 60898.		
	6-32Amps TPN		
		2.00	EACH
30	Supplying fully automatic star-delta starter Unit push button type with suitable wires, 3 contactors, one adjustable thermal timer mounted on a common base plate held in steel enclosure for use on 400/440 volts 3 phase and wired after fixing to the existing wooden board for meter		
	Upto 12.5 HP		
		2.00	EACH
31	For Distribution Transformer Centre (DTC) MS Box for housing the ETV Meter 3 Phase 4 Wire 5 Amps, with associated LT CT 0.5 Accuracy Class, ring type, with wiring Clamps, B&N and all other accessories required. (EXCLUDING ETV METER) With CT Ratio 800/5 for 500 kVA		
		2.00	EACH
32	Supplying and fixing of Modular MCB Devices (Tripper) With Breaking capacity of 6kA.		
	16 - 32 A SP		
		2.00	EACH

Name of the Work : Improvements to 20 numbers major junctions with greenery to improve air quality around the junction

Prof. K VENKATACHALAM CIRCLE (ULSOOR 2) CIVIL WORKS ESTIMATE

SL no	Description of work	Unit	Nos.	Dimension			Quantity	Unit
				Length	Breadth	Depth		
1	**Dismantling of cement concrete pavement** by mechanical means using pneumatic tools, breaking to pieces not exceeding 0.02 m3 in volume and stock piling at designated locations and disposal of dismantled materials and stacking serviceable and unserviceable materials separately							
	Unit	Cum						
	Footpath Flooring		1	268.00		0.15	40.20	
	Total						**40.20**	Cum
2	**Dismantling kerb stone** by manual means and disposal of dismantled material with all lifts							
	Unit	Cum						
	Kerbs		1	212.00		0.15	31.80	
	Total						**31.80**	Cum
3	**Earth work excavation** for Foundation by Mechanical means depth upto 1.50m, as per drawing and technical specifications, including setting out, shoring, strutting, barricading, caution lights, including cost of explosives, dressing of excavated surfaces, disposing off or levelling the excavated stuff or sorting & stacking the selected stuff for reuse in a radius of 50 m and lift upto 1.5 m including cost of labour, blasting materials, tools, usage of Machinery & all other appurtenaces required to complete the work complete.							
	In Hard Rock (requiring blasting) Depth upto 1.50m							
	Unit	Cum						
	For Footpath Kerb		1	516.00	0.45	0.30	69.66	
	For Island Kerb		1	163.00	0.45	0.30	22.01	
	For Landscape retaining wall		1	114.00	0.60	0.60	41.04	
	For Seating wall		1	64.00	0.60	0.60	23.04	
	For Pole Lights		12.00	0.60	0.60	0.60	2.59	
	Total						**158.34**	Cum
4	Loading and Unloading of Stone Boulder/Stone aggregates/Sand/Kankar/Moorum.							
	Unit	Cum						
	Demolished works						**230.34**	
	Total						**230.34**	Cum

5	Providing and laying in position **Cement Concrete** for levelling course for all works in foundation. The granite/trap/basalt crushed graded coarse aggregates and fine aggregates as per relevant IS Codesmachine mixed, laid in layers not exceeding 150 mm thickness, well compacted using plate vibrators, including all lead & lifts, cost of all materials of quality, labour, Usage charges of machinery, curing, and all the other appurtenances required to complete the work as per technical specifications.							
	Mix **1:3:6** Using **20 mm** nominal size graded crushed coarse aggregates							
	Unit	Cum						
	For Footpath Kerb		1	60.00	0.45	0.15	4.05	
	For Island Kerb		1	137.00	0.45	0.15	9.25	
	For Footpath flooring		1	46.00		0.15	6.90	
	For Island flooring		1	570.00		0.15	85.50	
	For Landscape retaining wall		1	114.00	0.60	0.15	10.26	
	For Seating wall		1	64.00	0.60	0.15	5.76	
	For Seating top		1	64.00	0.45	0.15	4.32	
	For Pole Lights		12.00	0.60	0.60	0.60	2.59	
	Total						**128.63**	Cum
6	Providing, laying, spreading and compacting graded stone aggregate to **wet mix macadam** specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver/grader in sub-base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density. MORTH Specification No. 406							
	Unit	Cum						
	For Footpath Kerb		1	60.00	0.45	0.15	4.05	
	For Island Kerb		1	137.00	0.45	0.15	9.25	
	For Footpath flooring		1	46.00		0.15	6.90	
	For Island flooring		1	570.00		0.15	85.50	
	For Landscape retaining wall		1	114.00	0.60	0.15	10.26	
	For Seating wall		1	64.00	0.60	0.15	5.76	
	For Seating top		1	64.00	0.45	0.15	4.32	
	Total						**126.04**	Cum
7	Providing **Coursed rubble masonry** (first sort) with hard stone in foundation and plinth with Cement mortar 1:6 (1 cement : 6 coarse sand)							
	Unit	Cum						
	For Landscape retaining wall		1	114.00	0.45	0.45	23.09	
	For Seating wall		1	64.00	0.45	0.45	12.96	
	Total						**36.05**	Cum
8	Providing **Brick work** with common burnt clay Non Modular bricks of class designation 3.5 in superstructure above plinth level in all shapes and sizes in Cement mortar 1:6 (1 cement : 6 coarse sand) including cost of all materials, labour, scaffolding and usage charges of machinery & other incidental charges complete as per the direction of engineer incharge of work.							

	Unit	Cum						
	For Landscape retaining wall		1	114.00	0.30	0.45	15.39	
	For Seating wall		1	64.00	0.30	0.45	8.64	
	Total						**24.03**	Cum
9	Providing **15 mm cement plaster** on rough side of single or half brick wall finished with a floating coat of neat cement of mix 1:3 (1 cement: 3 fine sand) including rounding off corners wherever required smooth rendering, providing and removing scaffolding, including cost of materials, labour, curing complete as per specifications and as per directions of Engineer-in-charge.							
	Unit	Sqm						
	For Landscape retaining wall		2	114.00	--	0.45	102.60	
	For Landscape retaining wall coping		1	114.00	--	0.30	34.20	
	For Seating wall		1	64.00	--	0.45	28.80	
	Total						**165.60**	Sqm
10	Providing and laying **Black Lapotra Granite** stone flooring in linear as well as curvilinear portions of the building all complete as per the architectural drawings with 18mm thick stone slab over 20 mm (average) thick base of cement mortar 1:4 (1 cement : 4 coarse sand) laid and jointed with cement slurry and pointing with white cement slurry admixed with pigment of matching shade including rubbing , curing and polishing etc. all complete as specified and as directed by the Engineer-in-charge.							
	Unit	Sqm						
	Cladding for Landscape retaining wall		1	114.00	--	0.45	51.30	
	Coping for Landscape retaining wall		1	114.00	--	0.30	34.20	
	Coping for Seating top		1	64.00	--	0.45	28.80	
	Total						**114.30**	Sqm

11	Providing and laying **60mm** thick factory made precast M -30 grade **Cement Concrete Paver Block** as per IRC SP 63:2018 & IS 15658 for Cycle Tracks & Pedestrian Footpaths of approved shape and colour, laid in required pattern and including over 30mm thick compacted bed of coarse sand, filling the joints with fine sand etc. all complete as per the direction of Engineer-in charge. (WMM/WBM Base to							
	Unit	Sqm						
	For Footpath flooring		1	46.00		--	46.00	
	Total						**46.00**	Sqm
12	Supplying and fixing M15 grade precast **cement concrete Kerb stone**s for Roadway, Sidewalls and gutters fixed with CM 1:3 fixed and finsihed in line as per direction of Engineer in charge. (The cost of PCC shall be paid extra)							
	600 x 300 x 150 mm size							
	Unit	M						
	For Footpath Kerb		1	60.00	--	--	60.00	

	For Island Kerb		1	137.00	--	--	137.00	
	Total						**197.00**	M
13	Providing and laying of **hot applied thermoplastic compound** 2.5 mm thick including reflectorising glass beads @ 250 g/m2 area, thickness of 2.5 mm is exclusive of surface applied glass beads as per IRC:35:2015.The finished surface to be level, uniform and free							
	Unit	Sqm						
	For Stop Lane		4	15.00	0.25	--	15.00	
	Zebra Crossings		90	4.00	0.50	--	180.00	
	End Lane		1	1418.00	0.25	--	354.50	
	Divider lane		1	1037.00	0.25	--	259.25	
	Total						**808.75**	Sqm
14	Supplying and Fixing of **Molded Shank Raised Pavement Markers / Cat's Eye** made of polycarbonate and ABS moulded body and reflective panels with micro prismatic lens capable of providing total internal reflection of the light entering the lens face and shall support a load of 16000 kg tested in accordance to ASTM D 4280 Type H and complying to Specifications of Category A of MORTH Circular No RW/NH/33023/10-97 DO III Dt 11.06. 1997. The height, width and length shall not exceed 50 mm, 100 mm and 102 +/- 2 mm and with minimum reflective area of 13 cm2 on each side and the slope to the base shall be 35 +/- 5 degree. The strength of detachment of the integrated cylindrical shanks, (of diameter not less than 19 +/- 2 mm and height not less than 30+/- 2 mm) from the body is to be a minimum value of 500 Kg. Fixing will be by drilling holes on the road for the shanks to go inside, without nails and using epoxy resin based adhesive as per manufacturer's recommendation and complete as directed by the engineer The contractor shall submit a							
	Unit	Sqm						
	Roads		230	--	--	--	230.00	
	Total						**230.00**	Sqm
15	**Retro-Reflectorised Traffic Signs** - Providing and fixing of retro- reflectorised cautionary, mandatory and informatory sign as per IRC:67:2022 made of Class C Type XI retro reflective sheeting fixed over 2 mm thick aluminium sheeting vide clause 801.3, 3mm/4mm thick Aluminium composite material sheet depending on the size of the sign fixed over the back support frame of min 25 x 25 x 3mm angle mounted on a mild steel circular pipe 65 NB, 3.2 mm thickness firmly fixed to the ground by means of properly designed foundation with M25 grade cement concrete 45 cm x 45 cm x 60 cm, 60 cm below ground level as per approved drawing.The sign shall be maintained as per section 12 of IRC:67:2022. **90 cm**							
	Unit	Sqm						
	Roads		60	--	--	--	60.00	
	Total						**60.00**	Sqm
16	**Road Delineators** - Supplying and installation of delineators (road way indicators, hazard markers, object markers), 80-100 cm high above ground level, painted black and white in 15 cm wide strips, fitted with 80 x 100 mm rectangular or 75 mm dia circular reflectorised panels at the top, buried or pressed into the ground and conforming to IRC-79-2019 and the							
	Unit	Each						

	Roads		50	--	--	--	50.00	
	Total						**50.00**	Each

17	**Chevron Boards** - Supply and installation of retro- reflective **Chevron signboards of 600x450mm** made out of cube corner micro prismatic grade sheeting confirming to Type XI standards of IRC:67:2022 & ASTM D 4956-09 specification & fixed over 3 mm thick Aluminium Composite Panel sheet having minimum 0.30 mm thick aluminum skin on both sides & fixed over back support frame of 25x25x 3mm MS angle frame. Supported on 75 mm dia OR 75x75x6mm Mild steel with clear height of not less than 2.1 m from the ground level to the bottom of the Sign board & 60 cm below ground level. The sign post should be painted with one coat of red oxide paint and two coats of synthetic enamel paint of black and white colour with bands of 30 cm height, firmly fixed to the ground by means of foundation with M 20 grade cement, concrete foundation size of 45 cm x 45 cm x 60 cm							
	Unit	No						
	Roads		20	--	--	--	20.00	
	Total						**20.00**	No
18	**Tubular Marker / Spring post 700 mm (Flexible Bollards)** - Providing Tubular marker made up of Polyurethane used to divide opposing lanes of road users shall be fixible in nature. Tubular marker having height 700 mm shall be having 75 mm Reboundable work zone retroreflective sheeting as per ASTM 4956 S2 (Application of Tubular Marker shall be							
	Unit	No						
	Roads		40	--	--	--	40.00	
	Total						**40.00**	No
	NON SR ITEMS							
1	Providing and laying flooring and steps fine dressed **granite stone slabs 80 mm** thick on cement mortar bed 1:6, 25 mm thick, and pointed with cement mortar 1:3 over existing cement concrete bed , including cost of materials, mortar, labour, curing complete as per specifications.							
	Unit	Sqm						
	Island Flooring		1	570.00			570.00	
	Total						**570.00**	Sqm

19	Providing and supplying of sadarahalli grey **granite bollards** of height 0.9 m and width of 0.45m width, cut to required shape including cost of all materials, labour, transportation etc							
	Unit	Nos						
							60.00	Nos
	Civil Sub Total							

Prof. K VENKATACHALAM CIRCLE (ULSOOR 2) ELECTRICAL ESTIMATE

SL No	DESCRIPTION		N	L	B	D	Qty	Unit

	POLE LIGHT		
20	Supply and erection of 14 Feet Height Street Light Pole 14 Feet Height Street Light Pole on suitable cement concrete foundation with 2.5 Feet height dia 95 mm cast iron decorative round pedestal as per design weighing not less than 37Kgs, the pedestal shall be fitted with Class 'C' G.I.Pipe 7 Feet height 75 mm outer dia and 7 feet height top pieceouter dia of 65 mm fixed by measure of threading/welding/coupling complete. (excluding foundation).		
		12.00	Nos
	POLE LIGHT FIXTURE		
21	Supply of LED pole mounting type post top lantern with pressure die cast aluminium housing body for optimal thermal dissipation. Lamp compartment comprising of anti glare clear diffuser with Injection moulded polycarbonate/ clear glass material, delivering superior light outputRated life Burning Hrs 50000 hr@ Lumen Maintenance of 70%, CCT > 5500K, IP 66 optical and electrical compartment & impact resistance of complete luminaire >IK08. Power Factor>0.9 with mains, Surge Protection- Min 5KV along with Over voltage/Overload, short circuit/ miss-wiring protection. Compatible for pole mounting with outer dia of 40mm to 50mm. Universal Voltage driver to operate wide voltage range from 100V to 270V 50/60Hz application. Compliance to IS 10322/1 EC 60598, LM 79 & LM 80 Adherence with RoHS. UL approved MCPCB LED Efficiency>1301m/w, nominal CRI >75. Luminaire manufacturer should have in- house facility accredited by NABL/CPRI & any Government certified agency & Design & Development facility certified by ISO 9001:2008. Housing with supplier word mark /name shall be Engraved / Embossing on the		
	LED Post Top Lantern with 45 W		
		12.00	Nos
	FIXING CHARGES		
22	Fixing charges of post top/ Gate/ Garden fitting /LED on the existing CI / GI or any other pipe using required size of reducer, wiring using suitable wires		
		12.00	Nos
	CONDUIT & ITS ACCESSORIES		
23	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply, including all CPVC plain & brass threaded fittings, including fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and testing of joints complete as per direction of Engineer in Charge. Internal work -		
	Total	620.00	Mtrs
	L.T. U.G. CABLES		
24	LT UG Cable. Heat shrinkable Straight Through Joint. 2.5 to 25 Sqmm		
		620.00	Mtrs
25	4 Core, 16 Sqmm, 30 No GI Wires (1.6 mm)		
		620.00	Mtrs
26	LABOUR for Aerial Bunched Conductor & Accessories. Stringing of 11 kV grade Aerial Bunched 3 Core cable of XLPE insulation of size 3x95 Sqmm + 1x70 Sqmm with Insulated		
		1240.00	Mtrs

27	Digging of Pit 1.8 Mtr depth for errection of 9 to 10 Mtr Long Steel/RCC/PSCC supports as per approved Drawing.		
	Hard Rock (By Chizling and/Or Wedging)		
		20.00	Mtrs
	WIRES & CABLES		
28	Supplying and drawing Flexible Multicore Cable manufactured with electrolytic grade flexible copper with low conductor confirming to IS:8130-1984 and (Virgin) PVC insulation sheathed suitable for working voltage upto 1100Volts as per IS-694:1990		
	3C X 4Sq.mm Copper Flexible		
		620.00	Mtrs
29	Supplying fixing and wiring earth electrode for grounding of lifts, transformers, DG sets etc. using 40 mm dia 2.9 mm thick 2.5m long GI pipe with GI funnel with mesh and suitable size reducer fixed on the top of the earth electrode.The funnel should be enclosed in a CC chamber of 400x400x400 mm with a cast iron cover. The earth electrode shall have staggered holes of 12 mm dia and the electrode should be covered 150 mm all-round with alternate layers of salt and charcoal from the bottom of the CC chamber. The connection from the		
	8 SWG GI Wire		
		24.00	Mtrs
30	Supplying and running of GI/Copper strips for grounding connections, using necessary fixing materials as required.		
	25mm x 3mm GI Patti		
		50.00	Rmt
31	Supplying and drawing 3 core flat PVC sheathed submersible pump cable manufactured with electrolytic grade copper with flexible copper with low resistance conductor confirming to IS:8130-1984 and virgin grade PVC insulation and powder coating extruded PVC sheathed suitable for working voltage upto 1100Volts as per IS-694:1990.		
	Submersible Flat Cable 3C X 4 sqm		
		110.00	Rmt
	CONTROL PANEL		
32	Supplying and fixing Moulded Case Circuit Breaker (MCCB) over the existing wood/panel board using necessary screws, bolts, nuts, necessary phase separators, handle and wiring complete. Protection of Overload and Short circuit with thermal Magnetic/Micro processor release and Earth Fault as per IS 13947. (Icu = Ics)		
	THREE POLE		
	200Amps 36kA.		
		1.00	EACH
33	Supplying and fixing miniature circuit breakers on existing MCB distribution boards using necessary fixing materials and 'C' Type curve, indicator ON/OFF, energy cross-3 with Short circuit breaking capacity of 10K and complete wiring as required confirming to IEC 60898.		
	6-32Amps TPN		
		2.00	EACH

34	Supplying fully automatic star-delta starter Unit push button type with suitable wires, 3 contactors, one adjustable thermal timer mounted on a common base plate held in steel enclosure for use on 400/440 volts 3 phase and wired after fixing to the existing wooden board for meter		
	Upto 12.5 HP		
		2.00	EACH
35	For Distribution Transformer Centre (DTC) MS Box for housing the ETV Meter 3 Phase 4 Wire 5 Amps, with associated LT CT 0.5 Accuracy Class, ring type, with wiring Clamps, B&N and all other accessories required. (EXCLUDING ETV METER) With CT Ratio 800/5		
		2.00	EACH
36	Supplying and fixing of Modular MCB Devices (Tripper) With Breaking capacity of 6kA.		
	16 - 32 A SP		
	Total Rate (₹)	**2.00**	EACH

BRUHAT BANGALORE MAHANAGARA PALIKE

Name of the Work : Improvements to 20 numbers major junctions with greenery to improve air quality around the junction

MADRAS SAPPERS HQ JUNCTION (ULSOOR 3) CIVIL WORKS ESTIMATE

SL no	Description of work	Unit	Nos.	Dimension			Quantity	Unit
				Length	**Breadth**	**Depth**		
1	**Earth work excavation** for Foundation by Mechanical means depth upto 1.50m, as per drawing and technical specifications, including setting out, shoring, strutting, barricading, caution lights, including cost of explosives, dressing of excavated surfaces, disposing off or levelling the excavated stuff or sorting & stacking the selected stuff for reuse in a radius of 50 m and lift upto 1.5 m including cost of labour, blasting materials, tools, usage of Machinery & all other appurtenaces required to complete the work complete.							
	In Hard Rock (requiring blasting) Depth upto 1.50m							
	Unit	Cum						
	For Footpath Kerb		1	268.00	0.45	0.30	36.18	
	For Island Kerb		1	155.00	0.45	0.30	20.93	
	For Pole Lights		12.00	0.60	0.60	0.60	2.59	
	Total						**59.70**	Cum
2	Providing and laying in position **Cement Concrete** for levelling course for all works in foundation. The granite/trap/basalt crushed graded coarse aggregates and fine aggregates as per relevant IS Codesmachine mixed, laid in layers not exceeding 150 mm thickness, well compacted using plate vibrators, including all lead & lifts, cost of all materials of quality, labour, Usage charges of machinery, curing, and all the other appurtenances required to complete the work as per technical specifications.							
	Mix **1:3:6** Using **20 mm** nominal size graded crushed coarse aggregates							
	Unit	Cum						
	For Footpath Kerb		1	268.00	0.45	0.15	18.09	
	For Island Kerb		1	155.00	0.45	0.15	10.46	
	For Footpath flooring		1	626.00		0.15	93.90	
	For Pole Lights		12.00	0.60	0.60	0.60	2.59	
	Total						**125.04**	Cum

3	Providing, laying, spreading and compacting graded stone aggregate to **wet mix macadam** specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver/grader in sub-base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density. MORTH Specification No. 406							
	Unit	Cum						
	For Footpath Kerb		1	268.00	0.45	0.15	18.09	
	For Island Kerb		1	155.00	0.45	0.15	10.46	
	For Footpath flooring		1	626.00		0.15	93.90	
	Total						**122.45**	Cum

4	Providing and laying **60mm** thick factory made precast M -30 grade **Cement Concrete Paver Block** as per IRC SP 63:2018 & IS 15658 for Cycle Tracks & Pedestrian Footpaths of approved shape and colour, laid in required pattern and including over 30mm thick compacted bed of coarse sand, filling the joints with fine sand etc. all complete as per the direction of Engineer-in charge. (WMM/WBM Base to							
	Unit	Sqm						
	For Footpath flooring		1	164.00		--	164.00	
	For Island flooring		1	96.00		--	96.00	
	Total						**260.00**	Sqm
5	Supplying and fixing M15 grade precast **cement concrete Kerb stone**s for Roadway, Sidewalls and gutters fixed with CM 1:3 fixed and finsihed in line as per direction of Engineer in charge. (The cost of PCC shall be paid extra)							
	600 x 300 x 150 mm size							
	Unit	M						
	For Footpath Kerb		1	268.00	--	--	268.00	
	For Island Kerb		1	155.00	--	--	155.00	
	Total						**423.00**	M
6	Providing and laying of **hot applied thermoplastic compound** 2.5 mm thick including reflectorising glass beads @ 250 g/m2 area, thickness of 2.5 mm is exclusive of surface applied glass beads as per IRC:35:2015.The finished surface to be level, uniform and free							
	Unit	Sqm						
	Zebra Crossings		90	4.00	0.50	--	180.00	
	End Lane		1	405.00	0.25	--	101.25	
	Divider lane		1	390.00	0.25	--	97.50	
	Total						**378.75**	Sqm
7	Supplying and Fixing of **Molded Shank Raised Pavement Markers / Cat's Eye** made of polycarbonate and ABS moulded body and reflective panels with micro prismatic lens capable of providing total internal reflection of the light entering the lens face and shall support a load of 16000 kg tested in accordance to ASTM D 4280 Type H and complying to Specifications of Category A of MORTH Circular No RW/NH/33023/10-97 DO III Dt 11.06. 1997. The height, width and length shall not exceed 50 mm, 100 mm and 102 +/- 2 mm and with minimum reflective area of 13 cm2 on each side and the slope to the base shall be 35 +/- 5 degree. The strength of detachment of the integrated cylindrical shanks, (of diameter not less than 19 +/- 2 mm and height not less than 30+/- 2 mm) from the body is to be a minimum value of 500 Kg. Fixing will be by drilling holes on the road for the shanks to go inside, without nails and using epoxy resin based adhesive as per manufacturer's recommendation and complete as directed by the engineer The contractor shall submit a two							
	Unit	Sqm						
	Roads		120	--	--	--	120.00	
	Total						**120.00**	Sqm

8	**Retro-Reflectorised Traffic Signs** - Providing and fixing of retro- reflectorised cautionary, mandatory and informatory sign as per IRC:67:2022 made of Class C Type XI retro reflective sheeting fixed over 2 mm thick aluminium sheeting vide clause 801.3, 3mm/4mm thick Aluminium composite material sheet depending on the size of the sign fixed over the back support frame of min 25 x 25 x 3mm angle mounted on a mild steel circular pipe 65 NB, 3.2 mm thickness firmly fixed to the ground by means of properly designed foundation with M25 grade cement concrete 45 cm x 45 cm x 60 cm, 60 cm below ground level as per approved drawing.The sign shall be maintained as per section 12 of IRC:67:2022. **90 cm**							
	Unit	Sqm						
	Roads		40	--	--	--	40.00	
	Total						**40.00**	Sqm
9	**Road Delineators** - Supplying and installation of delineators (road way indicators, hazard markers, object markers), 80-100 cm high above ground level, painted black and white in 15 cm wide strips, fitted with 80 x 100 mm rectangular or 75 mm dia circular reflectorised panels at the top, buried or pressed into the ground and conforming to IRC-79-2019 and the							
	Unit	Each						
	Roads		40	--	--	--	40.00	
	Total						**40.00**	Each
10	**Chevron Boards** - Supply and installation of retro- reflective **Chevron signboards of 600x450mm** made out of cube corner micro prismatic grade sheeting confirming to Type XI standards of IRC:67:2022 & ASTM D 4956-09 specification & fixed over 3 mm thick Aluminium Composite Panel sheet having minimum 0.30 mm thick aluminum skin on both sides & fixed over back support frame of 25x25x 3mm MS angle frame. Supported on 75 mm dia OR 75x75x6mm Mild steel with clear height of not less than 2.1 m from the ground level to the bottom of the Sign board & 60 cm below ground level. The sign post should be painted with one coat of red oxide paint and two coats of synthetic enamel paint of black and white colour with bands of 30 cm height, firmly fixed to the ground by means of foundation with M 20 grade cement, concrete foundation size of 45 cm x 45 cm x 60 cm including cost &							
	Unit	No						
	Roads		20	--	--	--	20.00	
	Total						**20.00**	No
11	**Tubular Marker / Spring post 700 mm (Flexible Bollards)** - Providing Tubular marker made up of Polyurethane used to divide opposing lanes of road users shall be fixible in nature. Tubular marker having height 700 mm shall be having 75 mm Reboundable work zone retroreflective sheeting as per ASTM 4956 S2 (Application of Tubular Marker shall be done as							
	Unit	No						
	Roads		40	--	--	--	40.00	
	Total						**40.00**	No

	NON SR ITEMS		

12	Providing and supplying of sadarahalli grey **granite bollards** of height 0.9 m and width of 0.45m width, cut to required shape including cost of all materials, labour, transportation etc							
	Unit	Nos						
							40.00	Nos
	Civil Sub Total							

MADRAS SAPPERS HQ JUNCTION (ULSOOR 3) ELECTRICAL ESTIMATE

SL No	DESCRIPTION		N	L	B	D	Qty	Unit
	POLE LIGHT							
13	Supply and erection of 14 Feet Height Street Light Pole 14 Feet Height Street Light Pole on suitable cement concrete foundation with 2.5 Feet height dia 95 mm cast iron decorative round pedestal as per design weighing not less than 37Kgs, the pedestal shall be fitted with Class 'C' G.I.Pipe 7 Feet height 75 mm outer dia and 7 feet height top pieceouter dia of 65 mm fixed by measure of threading/welding/coupling complete. (excluding foundation).							
							12.00	Nos
	POLE LIGHT FIXTURE							
14	Supply of LED pole mounting type post top lantern with pressure die cast aluminium housing body for optimal thermal dissipation. Lamp compartment comprising of anti glare clear diffuser with Injection moulded polycarbonate/ clear glass material, delivering superior light outputRated life Burning Hrs 50000 hr@ Lumen Maintenance of 70%, CCT > 5500K, IP 66 optical and electrical compartment & impact resistance of complete luminaire >IK08. Power Factor>0.9 with mains, Surge Protection- Min 5KV along with Over voltage/Overload, short circuit/ miss-wiring protection. Compatible for pole mounting with outer dia of 40mm to 50mm. Universal Voltage driver to operate wide voltage range from 100V to 270V 50/60Hz application. Compliance to IS 10322/1 EC 60598, LM 79 & LM 80 Adherence with RoHS. UL approved MCPCB LED Efficiency>1301m/w, nominal CRI >75. Luminaire manufacturer should have in- house facility accredited by NABL/CPRI & any Government certified agency & Design & Development facility certified by ISO 9001:2008. Housing with supplier word mark /name shall be Engraved / Embossing on the die cast							
	LED Post Top Lantern with 45 W							
							12.00	Nos
	FIXING CHARGES							
15	Fixing charges of post top/ Gate/ Garden fitting /LED on the existing CI / GI or any other pipe using required size of reducer, wiring using suitable wires							
							12.00	Nos
	CONDUIT & ITS ACCESSORIES							
16	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply, including all CPVC plain & brass threaded fittings, including fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and testing of joints complete as per direction of Engineer in Charge. Internal work - Exposed							
	Total						380.00	Mtrs
							0.00	
	L.T. U.G. CABLES							

17	LT UG Cable. Heat shrinkable Straight Through Joint. 2.5 to 25 Sqmm		
		380.00	Mtrs
18	4 Core, 16 Sqmm, 30 No GI Wires (1.6 mm)		
		380.00	Mtrs
19	LABOUR for Aerial Bunched Conductor & Accessories. Stringing of 11 kV grade Aerial Bunched 3 Core cable of XLPE insulation of size 3x95 Sqmm + 1x70 Sqmm with Insulated		
		760.00	Mtrs
20	Digging of Pit 1.8 Mtr depth for errection of 9 to 10 Mtr Long Steel/RCC/PSCC supports as per approved Drawing.		
	Hard Rock (By Chizling and/Or Wedging)		
		20.00	Mtrs
	WIRES & CABLES		
21	Supplying and drawing Flexible Multicore Cable manufactured with electrolytic grade flexible copper with low conductor confirming to IS:8130-1984 and (Virgin) PVC insulation sheathed suitable for working voltage upto 1100Volts as per IS-694:1990		
	3C X 4Sq.mm Copper Flexible		
		620.00	Mtrs
22	Supplying fixing and wiring earth electrode for grounding of lifts, transformers, DG sets etc. using 40 mm dia 2.9 mm thick 2.5m long GI pipe with GI funnel with mesh and suitable size reducer fixed on the top of the earth electrode.The funnel should be enclosed in a CC chamber of 400x400x400 mm with a cast iron cover. The earth electrode shall have staggered holes of 12 mm dia and the electrode should be covered 150 mm all-round with alternate layers of salt and charcoal from the bottom of the CC chamber. The connection from the		
	8 SWG GI Wire		
		24.00	Mtrs
23	Supplying and running of GI/Copper strips for grounding connections, using necessary fixing materials as required.		
	25mm x 3mm GI Patti		
		50.00	Rmt
24	Supplying and drawing 3 core flat PVC sheathed submersible pump cable manufactured with electrolytic grade copper with flexible copper with low resistance conductor confirming to IS:8130-1984 and virgin grade PVC insulation and powder coating extruded PVC sheathed suitable for working voltage upto 1100Volts as per IS-694:1990.		
	Submersible Flat Cable 3C X 4 sqm		
		110.00	Rmt
	CONTROL PANEL		
25	Supplying and fixing Moulded Case Circuit Breaker (MCCB) over the existing wood/panel board using necessary screws, bolts, nuts, necessary phase separators, handle and wiring complete. Protection of Overload and Short circuit with thermal Magnetic/Micro processor release and Earth Fault as per IS 13947. (Icu = Ics)		

	THREE POLE		
	200Amps 36kA.		
		1.00	EACH
26	Supplying and fixing miniature circuit breakers on existing MCB distribution boards using necessary fixing materials and 'C' Type curve, indicator ON/OFF, energy cross-3 with Short circuit breaking capacity of 10K and complete wiring as required confirming to IEC 60898.		
	6-32Amps TPN		
		2.00	EACH
27	Supplying fully automatic star-delta starter Unit push button type with suitable wires, 3 contactors, one adjustable thermal timer mounted on a common base plate held in steel enclosure for use on 400/440 volts 3 phase and wired after fixing to the existing wooden board for meter		
	Upto 12.5 HP		
		2.00	EACH
28	For Distribution Transformer Centre (DTC) MS Box for housing the ETV Meter 3 Phase 4 Wire 5 Amps, with associated LT CT 0.5 Accuracy Class, ring type, with wiring Clamps, B&N and all other accessories required. (EXCLUDING ETV METER) With CT Ratio 800/5		
		2.00	EACH
29	Supplying and fixing of Modular MCB Devices (Tripper) With Breaking capacity of 6kA.		
	16 - 32 A SP		
		2.00	EACH

BRUHAT BANGALORE MAHANAGARA PALIKE

Name of the Work : Improvements to 20 numbers major junctions with greenery to improve air quality around the junction

D. BHASKARAN ROAD JUNCTION (ULSOOR 4) CIVIL WORKS ESTIMATE

SL no	Description of work	Unit	Nos.	Dimension			Quantity	Unit
				Length	Breadth	Depth		
1	**Dismantling of cement concrete pavement** by mechanical means using pneumatic tools, breaking to pieces not exceeding 0.02 m3 in volume and stock piling at designated locations and disposal of dismantled materials and stacking serviceable and unserviceable materials separately							
	Unit	Cum						
	Footpath Flooring		1	597.00		0.15	89.55	
	Total						**89.55**	Cum
2	**Dismantling kerb stone** by manual means and disposal of dismantled material with all lifts							
	Unit	Cum						
	Kerbs		1	490.00		0.15	73.50	
	Total						**73.50**	Cum
3	**Earth work excavation** for Foundation by Mechanical means depth upto 1.50m, as per drawing and technical specifications, including setting out, shoring, strutting, barricading, caution lights, including cost of explosives, dressing of excavated surfaces, disposing off or levelling the excavated stuff or sorting & stacking the selected stuff for reuse in a radius of 50 m and lift upto 1.5 m including cost of labour, blasting materials, tools, usage of Machinery & all other appurtenaces required to complete the work complete.							
	In Hard Rock (requiring blasting) Depth upto 1.50m							
	Unit	Cum						
	For Footpath Kerb		1	328.00	0.45	0.30	44.28	
	For Island Kerb		1	148.00	0.45	0.30	19.98	
	For Pole Lights		12.00	0.60	0.60	0.60	2.59	
	Total						**66.85**	Cum
4	Loading and Unloading of Stone Boulder/Stone aggregates/Sand/Kankar/Moorum. (Tipper							
	Unit	Cum						
	Demolished works						**0.00**	
	Total						**0.00**	Cum
5	Providing and laying in position **Cement Concrete** for levelling course for all works in foundation. The granite/trap/basalt crushed graded coarse aggregates and fine aggregates as per relevant IS Codesmachine mixed, laid in layers not exceeding 150 mm thickness, well compacted using plate vibrators, including all lead & lifts, cost of all materials of quality, labour, Usage charges of machinery, curing, and all the other appurtenances required to complete the work as per technical specifications.							
	Mix **1:3:6** Using **20 mm** nominal size graded crushed coarse aggregates							
	Unit	Cum						
	For Footpath Kerb		1	328.00	0.45	0.15	22.14	
	For Island Kerb		1	148.00	0.45	0.15	9.99	
	For Footpath flooring		1	162.00		0.15	24.30	
	For Pole Lights		12.00	0.60	0.60	0.60	2.59	
	Total						**59.02**	Cum

6	Providing, laying, spreading and compacting graded stone aggregate to **wet mix macadam** specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver/grader in sub-base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density. MORTH Specification No. 406							
	Unit	Cum						
	For Footpath Kerb		1	328.00	0.45	0.15	22.14	
	For Island Kerb		1	148.00	0.45	0.15	9.99	
	For Footpath flooring		1	162.00		0.15	24.30	
	Total						**56.43**	Cum
7	Providing and laying **60mm** thick factory made precast M -30 grade **Cement Concrete Paver Block** as per IRC SP 63:2018 & IS 15658 for Cycle Tracks & Pedestrian Footpaths of approved shape and colour, laid in required pattern and including over 30mm thick compacted bed of coarse sand, filling the joints with fine sand etc. all complete as per the direction of Engineer-in charge. (WMM/WBM Base to be							
	Unit	Sqm						
	For Footpath flooring		1	162.00		--	162.00	
	Total						**162.00**	Sqm
8	Supplying and fixing M15 grade precast **cement concrete Kerb stone**s for Roadway, Sidewalls and gutters fixed with CM 1:3 fixed and finsihed in line as per direction of Engineer in charge. (The cost of PCC shall be paid extra)							
	600 x 300 x 150 mm size							
	Unit	M						
	For Footpath Kerb		1	328.00	--	--	328.00	
	For Island Kerb		1	148.00	--	--	148.00	
	Total						**476.00**	M
9	Providing and laying of **hot applied thermoplastic compound** 2.5 mm thick including reflectorising glass beads @ 250 g/m2 area, thickness of 2.5 mm is exclusive of surface applied glass beads as per IRC:35:2015.The finished surface to be level, uniform and free from streaks and holes.							
	Unit	Sqm						
	Zebra Crossings		90	4.00	0.50	--	180.00	
	End Lane		1	744.00	0.25	--	186.00	
	Divider lane		1	528.00	0.25	--	132.00	
	Total						**498.00**	Sqm

10	Supplying and Fixing of **Molded Shank Raised Pavement Markers / Cat's Eye** made of polycarbonate and ABS moulded body and reflective panels with micro prismatic lens capable of providing total internal reflection of the light entering the lens face and shall support a load of 16000 kg tested in accordance to ASTM D 4280 Type H and complying to Specifications of Category A of MORTH Circular No RW/NH/33023/10-97 DO III Dt 11.06. 1997. The height, width and length shall not exceed 50 mm, 100 mm and 102 +/- 2 mm and with minimum reflective area of 13 cm2 on each side and the slope to the base shall be 35 +/- 5 degree. The strength of detachment of the integrated cylindrical shanks, (of diameter not less than 19 +/- 2 mm and height not less than 30+/- 2 mm) from the body is to be a minimum value of 500 Kg. Fixing will be by drilling holes on the road for the shanks to go inside, without nails and using epoxy resin based adhesive as per manufacturer's recommendation and complete as directed by the engineer.The contractor shall submit a two year warranty for satisfactory field performance including stipulated retro-reflectance of the reflecting panel, to the Engineer.							
	Unit	Sqm						
	Roads		120	--	--	--	120.00	
	Total						**120.00**	Sqm
11	**Retro-Reflectorised Traffic Signs** - Providing and fixing of retro- reflectorised cautionary, mandatory and informatory sign as per IRC:67:2022 made of Class C Type XI retro reflective sheeting fixed over 2 mm thick aluminium sheeting vide clause 801.3, 3mm/4mm thick Aluminium composite material sheet depending on the size of the sign fixed over the back support frame of min 25 x 25 x 3mm angle mounted on a mild steel circular pipe 65 NB, 3.2 mm thickness firmly fixed to the ground by means of properly designed foundation with M25 grade cement concrete 45 cm x 45 cm x 60 cm, 60 cm below ground level as per approved drawing.The sign shall be maintained as per section 12 of IRC:67:2022. **90 cm equilateral**							
	Unit	Sqm						
	Roads		40	--	--	--	40.00	
	Total						**40.00**	Sqm
12	**Road Delineators** - Supplying and installation of delineators (road way indicators, hazard markers, object markers), 80-100 cm high above ground level, painted black and white in 15 cm wide strips, fitted with 80 x 100 mm rectangular or 75 mm dia circular reflectorised panels at the top, buried or pressed into the ground and conforming to IRC-79-2019 and the drawings.							
	Unit	Each						
	Roads		40	--	--	--	40.00	
	Total						**40.00**	Each

13	**Chevron Boards** - Supply and installation of retro- reflective **Chevron signboards of 600x450mm** made out of cube corner micro prismatic grade sheeting confirming to Type XI standards of IRC:67:2022 & ASTM D 4956-09 specification & fixed over 3 mm thick Aluminium Composite Panel sheet having minimum 0.30 mm thick aluminum skin on both sides & fixed over back support frame of 25x25x 3mm MS angle frame. Supported on 75 mm dia OR 75x75x6mm Mild steel with clear height of not less than 2.1 m from the ground level to the bottom of the Sign board & 60 cm below ground level. The sign post should be painted with one coat of red oxide paint and two coats of synthetic enamel paint of black and white colour with bands of 30 cm height, firmly fixed to the ground by means of foundation with M 20 grade cement, concrete foundation size of 45 cm x 45 cm x 60 cm including cost & conveyance							
	Unit	No						
	Roads		20	--	--	--	20.00	
	Total						**20.00**	No
14	**Tubular Marker / Spring post 700 mm (Flexible Bollards)** - Providing Tubular marker made up of Polyurethane used to divide opposing lanes of road users shall be fixible in nature. Tubular marker having height 700 mm shall be having 75 mm Reboundable work zone retroreflective sheeting as per ASTM 4956 S2 (Application of Tubular Marker shall be done as							
	Unit	No						
	Roads		40	--	--	--	40.00	
	Total						**40.00**	No
	NON SR ITEMS							
15	Providing and supplying of sadarahalli grey **granite bollards** of height 0.9 m and width of 0.45m width, cut to required shape including cost of all materials, labour, transportation etc							
	Unit	Nos						
							60.00	Nos
	Civil Sub Total							

D. BHASKARAN ROAD JUNCTION (ULSOOR 4) ELECTRICAL ESTIMATE								
SL No	**DESCRIPTION**		**N**	**L**	**B**	**D**	**Qty**	**Unit**
	POLE LIGHT							
16	Supply and erection of 14 Feet Height Street Light Pole 14 Feet Height Street Light Pole on suitable cement concrete foundation with 2.5 Feet height dia 95 mm cast iron decorative round pedestal as per design weighing not less than 37Kgs, the pedestal shall be fitted with Class 'C' G.I.Pipe 7 Feet height 75 mm outer dia and 7 feet height top pieceouter dia of 65 mm fixed by measure of threading/welding/coupling complete. (excluding foundation).							
							12.00	Nos
	POLE LIGHT FIXTURE							
17	Supply of LED pole mounting type post top lantern with pressure die cast aluminium housing body for optimal thermal dissipation. Lamp compartment comprising of anti glare clear diffuser with Injection moulded polycarbonate/ clear glass material, delivering superior light outputRated life Burning Hrs 50000 hr@ Lumen Maintenance of 70%, CCT > 5500K, IP 66 optical and electrical compartment & impact resistance of complete luminaire >IK08. Power Factor>0.9 with mains, Surge Protection- Min 5KV along with Over voltage/Overload, short circuit/ miss-wiring protection. Compatible for pole mounting with outer dia of 40mm to 50mm. Universal Voltage driver to operate wide voltage range from 100V to 270V 50/60Hz application. Compliance to IS 10322/1 EC 60598, LM 79 & LM 80 Adherence with RoHS. UL approved MCPCB LED Efficiency>1301m/w, nominal CRI >75. Luminaire manufacturer should have in- house facility accredited by NABL/CPRI & any Government certified agency & Design & Development facility certified by ISO 9001:2008. Housing with supplier word mark /name shall be Engraved / Embossing on the die cast housing/ Body part Warranty of 2 Years							
	LED Post Top Lantern with 45 W							
							12.00	Nos
	FIXING CHARGES							
18	Fixing charges of post top/ Gate/ Garden fitting /LED on the existing CI / GI or any other pipe using required size of reducer, wiring using suitable wires							
							12.00	Nos
	CONDUIT & ITS ACCESSORIES							
19	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply, including all CPVC plain & brass threaded fittings, including fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and testing of joints complete as per direction of Engineer in Charge. Internal work - Exposed on wall.50 mm nominal dia Pipes							
	Total						620.00	Mtrs
	L.T. U.G. CABLES							
20	LT UG Cable. Heat shrinkable Straight Through Joint. 2.5 to 25 Sqmm							
							620.00	Mtrs
21	4 Core, 16 Sqmm, 30 No GI Wires (1.6 mm)							
							620.00	Mtrs
22	LABOUR for Aerial Bunched Conductor & Accessories. Stringing of 11 kV grade Aerial Bunched 3 Core cable of XLPE insulation of size 3x95 Sqmm + 1x70 Sqmm with Insulated							
							1240.00	Mtrs

23	Digging of Pit 1.8 Mtr depth for errection of 9 to 10 Mtr Long Steel/RCC/PSCC supports as per approved Drawing.		
	Hard Rock (By Chizling and/Or Wedging)		
		20.00	Mtrs
	WIRES & CABLES		
24	Supplying and drawing Flexible Multicore Cable manufactured with electrolytic grade flexible copper with low conductor confirming to IS:8130-1984 and (Virgin) PVC insulation sheathed suitable for working voltage upto 1100Volts as per IS-694:1990		
	3C X 4Sq.mm Copper Flexible		
		620.00	Mtrs
25	Supplying fixing and wiring earth electrode for grounding of lifts, transformers, DG sets etc. using 40 mm dia 2.9 mm thick 2.5m long GI pipe with GI funnel with mesh and suitable size reducer fixed on the top of the earth electrode.The funnel should be enclosed in a CC chamber of 400x400x400 mm with a cast iron cover. The earth electrode shall have staggered holes of 12 mm dia and the electrode should be covered 150 mm all-round with alternate layers of salt and charcoal from the bottom of the CC chamber. The connection from the electrode is to be		
	8 SWG GI Wire		
		24.00	Mtrs
26	Supplying and running of GI/Copper strips for grounding connections, using necessary fixing materials as required.		
	25mm x 3mm GI Patti		
		50.00	Rmt
27	Supplying and drawing 3 core flat PVC sheathed submersible pump cable manufactured with electrolytic grade copper with flexible copper with low resistance conductor confirming to IS:8130-1984 and virgin grade PVC insulation and powder coating extruded PVC sheathed suitable for working voltage upto 1100Volts as per IS-694:1990.		
	Submersible Flat Cable 3C X 4 sqm		
		110.00	Rmt

	CONTROL PANEL		
28	Supplying and fixing Moulded Case Circuit Breaker (MCCB) over the existing wood/panel board using necessary screws, bolts, nuts, necessary phase separators, handle and wiring complete. Protection of Overload and Short circuit with thermal Magnetic/Micro processor release and Earth Fault as per IS 13947. (Icu = Ics)		
	THREE POLE		
	200Amps 36kA.		
		1.00	EACH
29	Supplying and fixing miniature circuit breakers on existing MCB distribution boards using necessary fixing materials and 'C' Type curve, indicator ON/OFF, energy cross-3 with Short circuit breaking capacity of 10K and complete wiring as required confirming to IEC 60898.		
	6-32Amps TPN		
		2.00	EACH
30	Supplying fully automatic star-delta starter Unit push button type with suitable wires, 3 contactors, one adjustable thermal timer mounted on a common base plate held in steel enclosure for use on 400/440 volts 3 phase and wired after fixing to the existing wooden board for motor		
	Upto 12.5 HP		
		2.00	EACH
31	For Distribution Transformer Centre (DTC) MS Box for housing the ETV Meter 3 Phase 4 Wire 5 Amps, with associated LT CT 0.5 Accuracy Class, ring type, with wiring Clamps, B&N and all other accessories required. (EXCLUDING ETV METER) With CT Ratio 800/5 for 500 kVA		
		2.00	EACH
32	Supplying and fixing of Modular MCB Devices (Tripper) With Breaking capacity of 6kA.		
	16 - 32 A SP		
		2.00	EACH

BRUHAT BANGALORE MAHANAGARA PALIKE

Name of the Work : Improvements to 20 numbers major junctions with greenery to improve air quality around the junction

MEKHRI CIRCLE CIVIL WORKS ESTIMATE

SL no	Description of work	Unit	Nos.	Dimension			Quantity	Unit
				Length	Breadth	Depth		
1	**Dismantling of existing structures** like culverts, bridges, retaining walls and other structure comprising of masonry, cement concrete, wood work, steel work, including T&P and scaffolding wherever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts complete as per specifications. i) Lime /Cement Concrete. I. By Manual Means: :B. Cement Concrete Grade M-15 & M-20. MORTH Specification No. 202.							
	Unit	Cum						
	Existing Island retaining wall		1	264.00	0.45	0.60	71.28	
	Total						**71.28**	Cum
2	**Earth work excavation** for Foundation by Mechanical means depth upto 1.50m, as per drawing and technical specifications, including setting out, shoring, strutting, barricading, caution lights, including cost of explosives, dressing of excavated surfaces, disposing off or levelling the excavated stuff or sorting & stacking the selected stuff for reuse in a radius of 50 m and lift upto 1.5 m including cost of labour, blasting materials, tools, usage of Machinery & all other appurtenaces required to complete the work complete.							
	In Hard Rock (requiring blasting) Depth upto 1.50m							
	Unit	Cum						
	For Kerb		1	536.00	0.45	0.30	72.36	
	Total						**72.36**	Cum
3	Providing and laying in position **Cement Concrete** for levelling course for all works in foundation. The granite/trap/basalt crushed graded coarse aggregates and fine aggregates as per relevant IS Codesmachine mixed, laid in layers not exceeding 150 mm thickness, well compacted using plate vibrators, including all lead & lifts, cost of all materials of quality, labour, Usage charges of machinery, curing, and all the other appurtenances required to complete the work as per technical specifications.							
	Mix **1:3:6** Using **20 mm** nominal size graded crushed coarse aggregates							
	Unit	Cum						
	For Footpath flooring		1	485.00		0.15	72.75	
	For Island flooring		1	132.00		0.15	19.80	
	For Footpath Kerb		1	460.00	0.45	0.15	31.05	
	For Island Kerb		1	264.00	0.45	0.15	17.82	
	Total						**141.42**	Cum

4	Providing, laying, spreading and compacting graded stone aggregate to **wet mix macadam** specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver/grader in sub-base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density. MORTH Specification No. 406							
	Unit	Cum						
	For Footpath flooring		1	485.00		0.15	72.75	
	For Island flooring		1	132.00		0.15	19.80	
	For Footpath Kerb		1	460.00	0.45	0.15	31.05	
	For Island Kerb		1	264.00	0.45	0.15	17.82	
	Total						**141.42**	Cum
5	Providing and laying **60mm** thick factory made precast M -30 grade **Cement Concrete Paver Block** as per IRC SP 63:2018 & IS 15658 for Cycle Tracks & Pedestrian Footpaths of approved shape and colour, laid in required pattern and including over 30mm thick compacted bed of coarse sand, filling the joints with fine sand etc. all complete as per the direction of Engineer-in charge. (WMM/WBM Base to							
	Unit	Sqm						
	For Footpath flooring		1	485.00		--	485.00	
	For Island flooring		1	132.00		--	132.00	
	Total						**617.00**	Sqm

6	Providing and laying **Black Lapotra Granite** stone flooring in linear as well as curvilinear portions of the building all complete as per the architectural drawings with 18mm thick stone slab over 20 mm (average) thick base of cement mortar 1:4 (1 cement : 4 coarse sand) laid and jointed with cement slurry and pointing with white cement slurry admixed with pigment of matching shade including rubbing , curing and polishing etc. all complete as specified and as directed by the Engineer-in-charge.							
	Unit	Sqm						
	For Bridge Retaining wall cladding		2	29.00	0.90	--	52.20	
	For Bridge Retaining wall coping		2	29.00	0.60	--	34.80	
	Total						**87.00**	Sqm
7	Supplying and fixing M15 grade precast **cement concrete Kerb stone**s for Roadway, Sidewalls and gutters fixed with CM 1:3 fixed and finsihed in line as per direction of Engineer in charge. (The cost of PCC shall be paid extra)							
	600 x 300 x 150 mm size							
	Unit	M						
	For Footpath Kerb		1	460.00	--	--	460.00	
	For Island Kerb		1	264.00	--	--	264.00	
	Total						**724.00**	M
8	Providing and applying tack coat with **RS1 Bituminous Emulsion** using emulsion pressure distributor at the rate of 0.20 kg/m2 on the prepared bituminous surface cleaned with mechanical broom							

	Unit	Sqm						
	For HRPC		4	8.00	8.00	--	256.00	
	Total						**256.00**	Sqm

9	Providing and laying **Bituminous Concrete** with 100 TPH capacity hot mix plant batch type using crushed aggregates of specified grading, premixed with bituminous binder VG-30, @ 5.4 per cent of mix and filler, transporting the hot mix to work site, laying with mechanical paver finisher to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH specification							
	Unit	Cum						
	For HRPC							
	Below Cobble stone							
			4	8.00	3.00	0.05	4.80	
	For Slopes							
			8	8.00	3.00	0.19	36.00	
						0.5 x 2.5 x 0.15		
	Total						**40.80**	Cum

10	Providing and laying 100mm thick factory made **precast M - 40 grade Cement Concrete Paver Block** as per IRC SP 63:2018 & IS 15658 for Commercial Traffic Axle load repetitions more than 10MSA upto 20MSA for Industrial Streets, Bus & Truck parking of approved shape and colour, laid in required pattern an including over 40mm thick compacted bed of coarse sand, filling the joints with fine sand etc. all complete as per the direction of Engineer-							
	Unit	Sqm						
	For HRPC		4	8.00	3.00	--	96.00	
	Total						**96.00**	Sqm
11	Providing and laying of **hot applied thermoplastic compound** 2.5 mm thick including reflectorising glass beads @ 250 g/m2 area, thickness of 2.5 mm is exclusive of surface applied glass beads as per IRC:35:2015.The finished surface to be level, uniform and free							
	Unit	Sqm						
	For HRPC Slopes		8	2.50	0.50	--	10.00	
	For Stop Lane		20	7.00	0.25	--	35.00	
	Zebra Crossings		90	4.00	0.50	--	180.00	
	Lanes		1	180.00	0.25	--	45.00	
	End Lane		1	960.00	0.25	--	240.00	
	Divider lane		1	892.00	0.25	--	223.00	
	For pattern on the road center		1	1219.00		--	609.50	
	Total						**1342.50**	Sqm

12	Supplying and Fixing of **Molded Shank Raised Pavement Markers / Cat's Eye** made of polycarbonate and ABS moulded body and reflective panels with micro prismatic lens capable of providing total internal reflection of the light entering the lens face and shall support a load of 16000 kg tested in accordance to ASTM D 4280 Type H and complying to Specifications of Category A of MORTH Circular No RW/NH/33023/10-97 DO III Dt 11.06. 1997. The height, width and length shall not exceed 50 mm, 100 mm and 102 +/- 2 mm and with minimum reflective area of 13 cm2 on each side and the slope to the base shall be 35 +/- 5 degree. The strength of detachment of the integrated cylindrical shanks, (of diameter not less than 19 +/- 2 mm and height not less than 30+/- 2 mm) from the body is to be a minimum value of 500 Kg. Fixing will be by drilling holes on the road for the shanks to go inside, without nails and using epoxy resin based adhesive as per manufacturer's recommendation and complete as directed by the engineer.The contractor shall submit a two							
	Unit	Sqm						
	Roads		183	--	--	--	182.00	
	Total						**182.00**	Sqm
13	**Retro-Reflectorised Traffic Signs** - Providing and fixing of retro- reflectorised cautionary, mandatory and informatory sign as per IRC:67:2022 made of Class C Type XI retro reflective sheeting fixed over 2 mm thick aluminium sheeting vide clause 801.3, 3mm/4mm thick Aluminium composite material sheet depending on the size of the sign fixed over the back support frame of min 25 x 25 x 3mm angle mounted on a mild steel circular pipe 65 NB, 3.2 mm thickness firmly fixed to the ground by means of properly designed foundation with M25 grade cement concrete 45 cm x 45 cm x 60 cm, 60 cm below ground level as per approved drawing.The sign shall be maintained as per section 12 of IRC:67:2022. **90 cm**							
	Unit	Sqm						
	Roads		60	--	--	--	60.00	
	Total						**60.00**	Sqm
14	**Road Delineators** - Supplying and installation of delineators (road way indicators, hazard markers, object markers), 80-100 cm high above ground level, painted black and white in 15 cm wide strips, fitted with 80 x 100 mm rectangular or 75 mm dia circular reflectorised panels at the top, buried or pressed into the ground and conforming to IRC-79-2019 and the							
	Unit	Each						
	Roads		50	--	--	--	50.00	
	Total						**50.00**	Each
15	**Chevron Boards** - Supply and installation of retro- reflective Chevron signboards of 600x450mm made out of cube corner micro prismatic grade sheeting confirming to Type XI standards of IRC:67:2022 & ASTM D 4956-09 specification & fixed over 3 mm thick Aluminium Composite Panel sheet having minimum 0.30 mm thick aluminum skin on both sides & fixed over back support frame of 25x25x 3mm MS angle frame. Supported on 75 mm dia OR 75x75x6mm Mild steel with clear height of not less than 2.1 m from the ground level to the bottom of the Sign board & 60 cm below ground level. The sign post should be painted with one coat of red oxide paint and two coats of synthetic enamel paint of black and white colour with bands of 30 cm height, firmly fixed to the ground by means of foundation with M 20 grade cement, concrete foundation size of 45 cm x 45 cm x 60 cm including cost &							

	Unit	No						
	Roads		20	--	--	--	20.00	
	Total						**20.00**	No
16	**Tubular Marker / Spring post 700 mm (Flexible Bollards)** - Providing Tubular marker made up of Polyurethane used to divide opposing lanes of road users shall be fixible in nature. Tubular marker having height 700 mm shall be having 75 mm Reboundable work zone retroreflective sheeting as per ASTM 4956 S2 (Application of Tubular Marker shall be [illegible] IRC SP 55-2014)							
	Unit	No						
	Roads		45	--	--	--	46.00	
	Total						**46.00**	No
	NON SR ITEMS							
17	Contructing seating of width 0.6m as per Unit drawings and design including back rest and all finishes as suggested by landscape architect.(Size 2.4m x 0.6m)							
	Unit	NOS						
	Seating		1	12.00			12.00	mtrs
	Total						**26.67**	NOS
18	Providing and supplying of sadarahalli grey **granite bollards** of height 0.9 m and width of 0.45m width, cut to required shape including cost of all materials, labour, transportation etc							
	Unit	Nos						
							42.00	Nos
	Civil Sub Total							
	MEKHRI CIRCLE ELECTRICAL ESTIMATE							
SL No	**DESCRIPTION**		**N**	**L**	**B**	**D**	**Qty**	**Unit**
	POLE LIGHT							
19	Supply and erection of 14 Feet Height Street Light Pole 14 Feet Height Street Light Pole on suitable cement concrete foundation with 2.5 Feet height dia 95 mm cast iron decorative round pedestal as per design weighing not less than 37Kgs, the pedestal shall be fitted with Class 'C' G.I.Pipe 7 Feet height 75 mm outer dia and 7 feet height top pieceouter dia of 65 mm fixed by measure of threading/welding/coupling complete. (excluding foundation).							
							45.00	Nos
	POLE LIGHT FIXTURE							

20	Supply of LED pole mounting type post top lantern with pressure die cast aluminium housing body for optimal thermal dissipation. Lamp compartment comprising of anti glare clear diffuser with Injection moulded polycarbonate/ clear glass material, delivering superior light outputRated life Burning Hrs 50000 hr@ Lumen Maintenance of 70%, CCT > 5500K, IP 66 optical and electrical compartment & impact resistance of complete luminaire >IK08. Power Factor>0.9 with mains, Surge Protection- Min 5KV along with Over voltage/Overload, short circuit/ miss-wiring protection. Compatible for pole mounting with outer dia of 40mm to 50mm. Universal Voltage driver to operate wide voltage range from 100V to 270V 50/60Hz application. Compliance to IS 10322/1 EC 60598, LM 79 & LM 80 Adherence with RoHS. UL approved MCPCB LED Efficiency>1301m/w, nominal CRI >75. Luminaire manufacturer should have in- house facility accredited by NABL/CPRI & any Government certified agency & Design & Development facility certified by ISO 9001:2008. Housing with supplier word mark /name shall be Engraved / Embossing on the die cast housing/ Body part Warranty of 2 Years against anymanufacturing defect working under		
	LED Post Top Lantern with 45 W		
		45.00	Nos
	FIXING CHARGES		
21	Fixing charges of post top/ Gate/ Garden fitting /LED on the existing CI / GI or any other pipe using required size of reducer, wiring using suitable wires		
		45.00	Nos
	CONDUIT & ITS ACCESSORIES		
22	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply, including all CPVC plain & brass threaded fittings, including fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and testing of joints complete as per direction of Engineer in Charge. Internal work -		
	Total	210.00	Mtrs
	L.T. U.G. CABLES		
23	LT UG Cable. Heat shrinkable Straight Through Joint. 2.5 to 25 Sqmm		
		890.00	Mtrs
24	4 Core, 16 Sqmm, 30 No GI Wires (1.6 mm)		
		890.00	Mtrs
25	LABOUR for Aerial Bunched Conductor & Accessories. Stringing of 11 kV grade Aerial Bunched 3 Core cable of XLPE insulation of size 3x95 Sqmm + 1x70 Sqmm with Insulated		
		1780.00	Mtrs
26	Digging of Pit 1.8 Mtr depth for errection of 9 to 10 Mtr Long Steel/RCC/PSCC supports as per approved Drawing.		
	Hard Rock (By Chizling and/Or Wedging)		
		20.00	Mtrs
	WIRES & CABLES		

27	Supplying and drawing Flexible Multicore Cable manufactured with electrolytic grade flexible copper with low conductor confirming to IS:8130-1984 and (Virgin) PVC insulation sheathed suitable for working voltage upto 1100Volts as per IS-694:1990		
	3C X 4Sq.mm Copper Flexible		
		110.00	Mtrs
28	Supplying fixing and wiring earth electrode for grounding of lifts, transformers, DG sets etc. using 40 mm dia 2.9 mm thick 2.5m long GI pipe with GI funnel with mesh and suitable size reducer fixed on the top of the earth electrode.The funnel should be enclosed in a CC chamber of 400x400x400 mm with a cast iron cover. The earth electrode shall have staggered holes of 12 mm dia and the electrode should be covered 150 mm all-round with alternate layers of salt and charcoal from the bottom of the CC chamber. The connection from the		
	8 SWG GI Wire		
		90.00	Mtrs
29	Supplying and running of GI/Copper strips for grounding connections, using necessary fixing materials as required.		
	25mm x 3mm GI Patti		
		50.00	Rmt
30	Supplying and drawing 3 core flat PVC sheathed submersible pump cable manufactured with electrolytic grade copper with flexible copper with low resistance conductor confirming to IS:8130-1984 and virgin grade PVC insulation and powder coating extruded PVC sheathed suitable for working voltage upto 1100Volts as per IS-694:1990.		
	Submersible Flat Cable 3C X 4 sqm		
		110.00	Rmt
	CONTROL PANEL		
31	Supplying and fixing Moulded Case Circuit Breaker (MCCB) over the existing wood/panel board using necessary screws, bolts, nuts, necessary phase separators, handle and wiring complete. Protection of Overload and Short circuit with thermal Magnetic/Micro processor release and Earth Fault as per IS 13947. (Icu = Ics)		
	THREE POLE		
	200Amps 36kA.		
		1.00	EACH
32	Supplying and fixing miniature circuit breakers on existing MCB distribution boards using necessary fixing materials and 'C' Type curve, indicator ON/OFF, energy cross-3 with Short circuit breaking capacity of 10K and complete wiring as required confirming to IEC 60898.		
	6-32Amps TPN		
		2.00	EACH
33	Supplying fully automatic star-delta starter Unit push button type with suitable wires, 3 contactors, one adjustable thermal timer mounted on a common base plate held in steel enclosure for use on 400/440 volts 3 phase and wired after fixing to the existing wooden board for meter		
	Upto 12.5 HP		
		2.00	EACH

34	For Distribution Transformer Centre (DTC) MS Box for housing the ETV Meter 3 Phase 4 Wire 5 Amps, with associated LT CT 0.5 Accuracy Class, ring type, with wiring Clamps, B&N and all other accessories required. (EXCLUDING ETV METER) With CT Ratio 800/5		
		2.00	EACH
35	Supplying and fixing of Modular MCB Devices (Tripper) With Breaking capacity of 6kA.		
	16 - 32 A SP		
	Total Rate (₹)	**2.00**	EACH
36	Supply and Installation of 50 watt UPLIGHTERS LED light with 2 way connector for each light. Technical Specification • Luminaire made up of die cast dark grey powder coated aluminium alloy with non corrosive SS fasteners with low copper content. • Luminaire prewired with LED driver and Suitable for operation on 240V, 50Hz single phase ac supply. IP67 , mechanical resistance IK08	25.00	EACH
37	Supply and Installation of 10watt focus WALL LED light with 2 way connector for each light. Technical Specification • Luminaire made up of die cast dark grey powder coated aluminium alloy with non corrosive SS fasteners with low copper content. • Luminaire prewired with LED driver and Suitable for operation on 240V, 50Hz single phase ac supply. IP67 , mechanical resistance IK08	25.00	EACH

BRUHAT BANGALORE MAHANAGARA PALIKE

Name of the Work : Improvements to 20 numbers major junctions with greenery to improve air quality around the junction

JNANABHARATI JUNCTION CIVIL WORKS ESTIMATE

SL no	Description of work	Unit	Nos.	Dimension			Quantity	Unit
				Length	Breadth	Depth		
1	**Earth work excavation** for Foundation by Mechanical means depth upto 1.50m, as per drawing and technical specifications, including setting out, shoring, strutting, barricading, caution lights, including cost of explosives, dressing of excavated surfaces, disposing off or levelling the excavated stuff or sorting & stacking the selected stuff for reuse in a radius of 50 m and lift upto 1.5 m including cost of labour, blasting materials, tools, usage of Machinery & all other appurtenaces required to complete the work complete.							
	In Hard Rock (requiring blasting) Depth upto 1.50m							
	Unit	Cum						
	For Footpath Kerb		1	92.00	0.45	0.15	6.21	
	For Island Kerb		1	180.00	0.45	0.15	12.15	
	Total						**18.36**	Cum
2	Providing and laying in position **Cement Concrete** for levelling course for all works in foundation. The granite/trap/basalt crushed graded coarse aggregates and fine aggregates as per relevant IS Codesmachine mixed, laid in layers not exceeding 150 mm thickness, well compacted using plate vibrators, including all lead & lifts, cost of all materials of quality, labour, Usage charges of machinery, curing, and all the other appurtenances required to complete the work as per technical specifications.							
	Mix **1:3:6** Using **20 mm** nominal size graded crushed coarse aggregates							
	Unit	Cum						
	For Footpath flooring		1	189.00		0.15	28.35	
	For Footpath Kerb		1	92.00	0.45	0.15	6.21	
	For Island Kerb		1	180.00	0.45	0.15	12.15	
	Total						**46.71**	Cum
3	Providing, laying, spreading and compacting graded stone aggregate to **wet mix macadam** specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver/grader in sub-base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density. MORTH Specification No. 406							
	Unit	Cum						
	For Footpath flooring		1	189.00		0.15	28.35	
	For Footpath Kerb		1	92.00	0.45	0.15	6.21	
	For Island Kerb		1	180.00	0.45	0.15	12.15	
	Total						**46.71**	Cum

4	Providing and laying **60mm** thick factory made precast M -30 grade **Cement Concrete Paver Block** as per IRC SP 63:2018 & IS 15658 for Cycle Tracks & Pedestrian Footpaths of approved shape and colour, laid in required pattern and including over 30mm thick compacted bed of coarse sand, filling the joints with fine sand etc. all complete as per the direction of Engineer-in charge. (WMM/WBM Base to be							
	Unit	Sqm						
	For Footpath flooring		1	189.00		--	189.00	
	Total						**189.00**	Sqm
5	Supplying and fixing M15 grade precast **cement concrete Kerb stone**s for Roadway, Sidewalls and gutters fixed with CM 1:3 fixed and finsihed in line as per direction of Engineer in charge. (The cost of PCC shall be paid extra)							
	600 x 300 x 150 mm size							
	Unit	M						
	For Footpath Kerb		1	92.00	--	--	92.00	
	For Island Kerb		1	180.00	--	--	180.00	
	Total						**272.00**	M
6	Providing and applying tack coat with **RS1 Bituminous Emulsion** using emulsion pressure distributor at the rate of 0.20 kg/m2 on the prepared bituminous surface cleaned with mechanical broom							
	Unit	Sqm						
	For HRPC		4	7.00	8.00	--	224.00	
	Total						**224.00**	Sqm
7	Providing and laying **Bituminous Concrete** with 100 TPH capacity hot mix plant batch type using crushed aggregates of specified grading, premixed with bituminous binder VG-30, @ 5.4 per cent of mix and filler, transporting the hot mix to work site, laying with mechanical paver finisher to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH specification clause No.							
	Unit	Cum						
	For HRPC							
	Below Cobble stone							
			4	7.00	3.00	0.05	4.20	
	For Slopes							
			8	7.00	3.00	0.19	31.50	
						0.5 x 2.5 x 0.15		
	Total						**35.70**	Cum
8	Providing and laying 100mm thick factory made **precast M - 40 grade Cement Concrete Paver Block** as per IRC SP 63:2018 & IS 15658 for Commercial Traffic Axle load repetitions more than 10MSA upto 20MSA for Industrial Streets, Bus & Truck parking of approved shape and colour, laid in required pattern an including over 40mm thick compacted bed of coarse sand, filling the joints with fine sand etc. all complete as per the direction of Engineer-in-charge.							
	Unit	Sqm						

	For HRPC		4	7.00	3.00	--	84.00	
	Total						**84.00**	Sqm
9	Providing and laying of **hot applied thermoplastic compound** 2.5 mm thick including reflectorising glass beads @ 250 g/m2 area, thickness of 2.5 mm is exclusive of surface applied glass beads as per IRC:35:2015.The finished surface to be level, uniform and free from streaks							
	Unit	Sqm						
	For HRPC Slopes		8	2.50	0.50	--	10.00	
	For Stop Lane		20	7.00	0.25	--	35.00	
	Zebra Crossings		90	4.00	0.50	--	180.00	
	End Lane		1	1075.00	0.25	--	268.75	
	Divider lane		1	796.00	0.25	--	199.00	
	For pattern on the road center		1	840.00		--	420.00	
	Total						**1112.75**	Sqm
10	Supplying and Fixing of **Molded Shank Raised Pavement Markers / Cat's Eye** made of polycarbonate and ABS moulded body and reflective panels with micro prismatic lens capable of providing total internal reflection of the light entering the lens face and shall support a load of 16000 kg tested in accordance to ASTM D 4280 Type H and complying to Specifications of Category A of MORTH Circular No RW/NH/33023/10-97 DO III Dt 11.06. 1997. The height, width and length shall not exceed 50 mm, 100 mm and 102 +/- 2 mm and with minimum reflective area of 13 cm2 on each side and the slope to the base shall be 35 +/- 5 degree. The strength of detachment of the integrated cylindrical shanks, (of diameter not less than 19 +/- 2 mm and height not less than 30+/- 2 mm) from the body is to be a minimum value of 500 Kg. Fixing will be by drilling holes on the road for the shanks to go inside, without nails and using epoxy resin based adhesive as per manufacturer's recommendation and complete as directed by the engineer The contractor shall submit a two year warranty for satisfactory field							
	Unit	Sqm						
	Roads		120	--	--	--	120.00	
	Total						**120.00**	Sqm
11	**Retro-Reflectorised Traffic Signs** - Providing and fixing of retro- reflectorised cautionary, mandatory and informatory sign as per IRC:67:2022 made of Class C Type XI retro reflective sheeting fixed over 2 mm thick aluminium sheeting vide clause 801.3, 3mm/4mm thick Aluminium composite material sheet depending on the size of the sign fixed over the back support frame of min 25 x 25 x 3mm angle mounted on a mild steel circular pipe 65 NB, 3.2 mm thickness firmly fixed to the ground by means of properly designed foundation with M25 grade cement concrete 45 cm x 45 cm x 60 cm, 60 cm below ground level as per approved drawing.The sign shall be maintained as per section 12 of IRC:67:2022. **90 cm equilateral**							
	Unit	Sqm						
	Roads		60	--	--	--	60.00	
	Total						**60.00**	Sqm

12	**Road Delineators** - Supplying and installation of delineators (road way indicators, hazard markers, object markers), 80-100 cm high above ground level, painted black and white in 15 cm wide strips, fitted with 80 x 100 mm rectangular or 75 mm dia circular reflectorised panels at the top, buried or pressed into the ground and conforming to IRC-79-2019 and the							
	Unit	Each						
	Roads		50	--	--	--	50.00	
	Total						**50.00**	Each

13	**Chevron Boards** - Supply and installation of retro- reflective **Chevron signboards of 600x450mm** made out of cube corner micro prismatic grade sheeting confirming to Type XI standards of IRC:67:2022 & ASTM D 4956-09 specification & fixed over 3 mm thick Aluminium Composite Panel sheet having minimum 0.30 mm thick aluminum skin on both sides & fixed over back support frame of 25x25x 3mm MS angle frame. Supported on 75 mm dia OR 75x75x6mm Mild steel with clear height of not less than 2.1 m from the ground level to the bottom of the Sign board & 60 cm below ground level. The sign post should be painted with one coat of red oxide paint and two coats of synthetic enamel paint of black and white colour with bands of 30 cm height, firmly fixed to the ground by means of foundation with M 20 grade cement, concrete foundation size of 45 cm x 45 cm x 60 cm including cost &							
	Unit	No						
	Roads		20	--	--	--	20.00	
	Total						**20.00**	No
14	**Tubular Marker / Spring post 700 mm (Flexible Bollards)** - Providing Tubular marker made up of Polyurethane used to divide opposing lanes of road users shall be fixible in nature. Tubular marker having height 700 mm shall be having 75 mm Reboundable work zone retroreflective sheeting as per ASTM 4956 S2 (Application of Tubular Marker shall be done as							
	Unit	No						
	Roads		40	--	--	--	40.00	
	Total						**40.00**	No
	NON SR ITEMS							
15	Contructing seating of width 0.6m as per Unit drawings and design including back rest and all finishes as suggested by landscape architect.(Size 2.4m x 0.6m)							
	Unit	NOS						
	Seating		1	6.00			6.00	mtrs
							13.33	NOS

16	Providing and supplying of sadarahalli grey **granite bollards** of height 0.9 m and width of 0.45m width, cut to required shape including cost of all materials, labour, transportation etc							
	Unit	Nos						
							25.00	Nos

	Civil Sub Total							
	JNANABHARATI JUNCTION ELECTRICAL ESTIMATE							
SL No	**DESCRIPTION**		**N**	**L**	**B**	**D**	**Qty**	**Unit**
	POLE LIGHT							
17	Supply and erection of 14 Feet Height Street Light Pole 14 Feet Height Street Light Pole on suitable cement concrete foundation with 2.5 Feet height dia 95 mm cast iron decorative round pedestal as per design weighing not less than 37Kgs, the pedestal shall be fitted with Class 'C' G.I.Pipe 7 Feet height 75 mm outer dia and 7 feet height top pieceouter dia of 65 mm fixed by measure of threading/welding/coupling complete. (excluding foundation).							
							15.00	Nos
	POLE LIGHT FIXTURE							
18	Supply of LED pole mounting type post top lantern with pressure die cast aluminium housing body for optimal thermal dissipation. Lamp compartment comprising of anti glare clear diffuser with Injection moulded polycarbonate/ clear glass material, delivering superior light outputRated life Burning Hrs 50000 hr@ Lumen Maintenance of 70%, CCT > 5500K, IP 66 optical and electrical compartment & impact resistance of complete luminaire >IK08. Power Factor>0.9 with mains, Surge Protection- Min 5KV along with Over voltage/Overload, short circuit/ miss-wiring protection. Compatible for pole mounting with outer dia of 40mm to 50mm. Universal Voltage driver to operate wide voltage range from 100V to 270V 50/60Hz application. Compliance to IS 10322/1 EC 60598, LM 79 & LM 80 Adherence with RoHS. UL approved MCPCB LED Efficiency>1301m/w, nominal CRI >75. Luminaire manufacturer should have in- house facility accredited by NABL/CPRI & any Government certified agency & Design & Development facility certified by ISO 9001:2008. Housing with supplier word mark /name shall be Engraved / Embossing on the die cast housing/ Body part Warranty of 2 Years against anymanufacturing defect working under standard electrical conditions as							
	LED Post Top Lantern with 45 W							
							15.00	Nos
	FIXING CHARGES							
19	Fixing charges of post top/ Gate/ Garden fitting /LED on the existing CI / GI or any other pipe using required size of reducer, wiring using suitable wires							
							15.00	Nos
	CONDUIT & ITS ACCESSORIES							
20	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply, including all CPVC plain & brass threaded fittings, including fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and testing of joints complete as per direction of Engineer in Charge. Internal work - Exposed							
	Total						320.00	Mtrs
	L.T. U.G. CABLES							
21	LT UG Cable. Heat shrinkable Straight Through Joint. 2.5 to 25 Sqmm							
							320.00	Mtrs
22	4 Core, 16 Sqmm, 30 No GI Wires (1.6 mm)							

		320.00	Mtrs
23	LABOUR for Aerial Bunched Conductor & Accessories. Stringing of 11 kV grade Aerial Bunched 3 Core cable of XLPE insulation of size 3x95 Sqmm + 1x70 Sqmm with Insulated		
		640.00	Mtrs
24	Digging of Pit 1.8 Mtr depth for errection of 9 to 10 Mtr Long Steel/RCC/PSCC supports as per approved Drawing.		
	Hard Rock (By Chizling and/Or Wedging)		
		20.00	Mtrs
	WIRES & CABLES		
25	Supplying and drawing Flexible Multicore Cable manufactured with electrolytic grade flexible copper with low conductor confirming to IS:8130-1984 and (Virgin) PVC insulation sheathed suitable for working voltage upto 1100Volts as per IS-694:1990		
	3C X 4Sq.mm Copper Flexible		
		110.00	Mtrs
26	Supplying fixing and wiring earth electrode for grounding of lifts, transformers, DG sets etc. using 40 mm dia 2.9 mm thick 2.5m long GI pipe with GI funnel with mesh and suitable size reducer fixed on the top of the earth electrode.The funnel should be enclosed in a CC chamber of 400x400x400 mm with a cast iron cover. The earth electrode shall have staggered holes of 12 mm dia and the electrode should be covered 150 mm all-round with alternate layers of salt and charcoal from the bottom of the CC chamber. The connection from the electrode is to be		
	8 SWG GI Wire		
		30.00	Mtrs
27	Supplying and running of GI/Copper strips for grounding connections, using necessary fixing materials as required.		
	25mm x 3mm GI Patti		
		50.00	Rmt
28	Supplying and drawing 3 core flat PVC sheathed submersible pump cable manufactured with electrolytic grade copper with flexible copper with low resistance conductor confirming to IS:8130-1984 and virgin grade PVC insulation and powder coating extruded PVC sheathed suitable for working voltage upto 1100Volts as per IS-694:1990.		
	Submersible Flat Cable 3C X 4 sqm		
		110.00	Rmt
	CONTROL PANEL		
29	Supplying and fixing Moulded Case Circuit Breaker (MCCB) over the existing wood/panel board using necessary screws, bolts, nuts, necessary phase separators, handle and wiring complete. Protection of Overload and Short circuit with thermal Magnetic/Micro processor release and Earth Fault as per IS 13947. (Icu = Ics)		
	THREE POLE		
	200Amps 36kA.		
		1.00	EACH

30	Supplying and fixing miniature circuit breakers on existing MCB distribution boards using necessary fixing materials and 'C' Type curve, indicator ON/OFF, energy cross-3 with Short circuit breaking capacity of 10K and complete wiring as required confirming to IEC 60898.		
	6-32Amps TPN		
		2.00	EACH
31	Supplying fully automatic star-delta starter Unit push button type with suitable wires, 3 contactors, one adjustable thermal timer mounted on a common base plate held in steel enclosure for use on 400/440 volts 3 phase and wired after fixing to the existing wooden board for meter		
	Upto 12.5 HP		
		2.00	EACH
32	For Distribution Transformer Centre (DTC) MS Box for housing the ETV Meter 3 Phase 4 Wire 5 Amps, with associated LT CT 0.5 Accuracy Class, ring type, with wiring Clamps, B&N and all other accessories required. (EXCLUDING ETV METER) With CT Ratio 800/5 for 500 kVA		
		2.00	EACH
33	Supplying and fixing of Modular MCB Devices (Tripper) With Breaking capacity of 6kA.		
	16 - 32 A SP		
		2.00	EACH
	NON SR ITEMS		
34	Supply and Installation of 200 watt RGB focus LED light with 2 way connector for each light. Technical Specification • Luminaire made up of die cast dark grey powder coated aluminium alloy with non corrosive SS fasteners with low copper content. • Luminaire prewired with LED driver and Suitable for operation on 240V, 50Hz single phase ac supply. IP67 , mechanical resistance IK08	4.00	EACH
35	Supply and Installation of 50 watt UPLIGHTERS LED light with 2 way connector for each light. Technical Specification • Luminaire made up of die cast dark grey powder coated aluminium alloy with non corrosive SS fasteners with low copper content. • Luminaire prewired with LED driver and Suitable for operation on 240V, 50Hz single phase ac supply. IP67 , mechanical resistance IK08	25.00	EACH
36	Supply and Installation of 10watt focus WALL LED light with 2 way connector for each light. Technical Specification • Luminaire made up of die cast dark grey powder coated aluminium alloy with non corrosive SS fasteners with low copper content. • Luminaire prewired with LED driver and Suitable for operation on 240V, 50Hz single phase ac supply. IP67 , mechanical resistance IK08	25.00	EACH

37	Supply and Installation of 6 watt LED FOOT light with 2 way connector for eachlight. Technical Specification • Luminaire made up of die cast dark grey powder coated aluminium alloy with non corrosive SS fasteners with low copper content. • Luminaire prewired with LED driver and Suitable for operation on 240V, 50Hz single phase ac supply. IP67 , mechanical resistance IK08	25.00	EACH

BRUHAT BANGALORE MAHANAGARA PALIKE

Name of the Work : Improvements to 20 numbers major junctions with greenery to improve air quality around the junction

NANJAPPA JUNCTION CIVIL WORKS ESTIMATE

SL no	Description of work	Unit	Nos.	Dimension			Quantity	Unit
				Length	Breadth	Depth		
1	**Dismantling of cement concrete pavement** by mechanical means using pneumatic tools, breaking to pieces not exceeding 0.02 m3 in volume and stock piling at designated locations and disposal of dismantled materials and stacking serviceable and unserviceable materials separately							
	Unit	Cum						
	Footpath Flooring		1	489.00		0.15	73.35	
	Total						**73.35**	Cum
2	**Dismantling kerb stone** by manual means and disposal of dismantled material with all lifts							
	Unit	Cum						
	Kerbs		1	316.00		0.15	47.40	
	Total						**47.40**	Cum
3	**Earth work excavation** for Foundation by Mechanical means depth upto 1.50m, as per drawing and technical specifications, including setting out, shoring, strutting, barricading, caution lights, including cost of explosives, dressing of excavated surfaces, disposing off or levelling the excavated stuff or sorting & stacking the selected stuff for reuse in a radius of 50 m and lift upto 1.5 m including cost of labour, blasting materials, tools, usage of Machinery & all other appurtenaces required to complete the work complete.							
	In Hard Rock (requiring blasting) Depth upto 1.50m							
	Unit	Cum						
	For Footpath Kerb		1	516.00	0.45	0.30	69.66	
	For Island Kerb		1	163.00	0.45	0.30	22.01	
	For Seating		11	11.00	0.60	0.60	43.56	
	For Planter Seating		11	5.00	0.60	0.60	19.80	
	For Pole Lights		12.00	0.60	0.60	0.60	2.59	
	Total						**157.62**	Cum
4	Loading and Unloading of Stone Boulder/Stone aggregates/Sand/Kankar/Moorum.							
	Unit	Cum						
	Demolished works						**120.75**	
	Total						**120.75**	Cum

5	Providing and laying in position **Cement Concrete** for levelling course for all works in foundation. The granite/trap/basalt crushed graded coarse aggregates and fine aggregates as per relevant IS Codesmachine mixed, laid in layers not exceeding 150 mm thickness, well compacted using plate vibrators, including all lead & lifts, cost of all materials of quality, labour, Usage charges of machinery, curing, and all the other appurtenances required to complete the work as per technical specifications.							
	Mix **1:3:6** Using **20 mm** nominal size graded crushed coarse aggregates							
	Unit	Cum						
	For Footpath Kerb		1	516.00	0.45	0.15	34.83	
	For Island Kerb		1	163.00	0.45	0.15	11.00	
	For Footpath flooring		1	1959.00		0.15	293.85	
	For Island flooring		1	48.00		0.15	7.20	
	For Seating		11	11.00	0.60	0.15	10.89	
	For Planter Seating		11	5.00	0.60	0.15	4.95	
	For Pole Lights		12.00	0.60	0.60	0.60	2.59	
	Total						**365.31**	Cum

6	Providing, laying, spreading and compacting graded stone aggregate to **wet mix macadam** specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver/grader in sub-base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density. MORTH Specification No. 406							
	Unit	Cum						
	For Footpath Kerb		1	516.00	0.45	0.15	34.83	
	For Island Kerb		1	163.00	0.45	0.15	11.00	
	For Footpath flooring		1	1959.00		0.15	293.85	
	For Island flooring		1	48.00		0.15	7.20	
	For Seating		11	11.00	0.60	0.15	10.89	
	For Planter Seating		11	5.00	0.60	0.15	4.95	
	Total						**362.72**	Cum

7	Providing **Coursed rubble masonry** (first sort) with hard stone in foundation and plinth with Cement mortar 1:6 (1 cement : 6 coarse sand).							
	Unit	Cum						
	For Seating		11	11.00	0.60	0.45	32.67	
	For Planter Seating		11	5.00	0.60	0.45	14.85	
	Total						**47.52**	Cum
8	Providing **Brick work** with common burnt clay Non Modular bricks of class designation 3.5 in superstructure above plinth level in all shapes and sizes in Cement mortar 1:6 (1 cement : 6 coarse sand) including cost of all materials, labour, scaffolding and usage charges of machinery & other incidental charges complete as per the direction of engineer incharge of work.							
	Unit	Cum						

	For Seating		11	11.00	0.45	0.45	24.50	
	For Planter Seating		11	5.00	0.60	0.45	14.85	
	For Planter Seating back rest		11	3.00	0.15	0.45	2.23	
	Total						**41.58**	Cum
9	Providing **15 mm cement plaster** on rough side of single or half brick wall finished with a floating coat of neat cement of mix 1:3 (1 cement: 3 fine sand) including rounding off corners wherever required smooth rendering, providing and removing scaffolding, including cost of materials, labour, curing complete as per specifications and as per directions of Engineer-in-charge.							
	Unit	Sqm						
	For Seating		11	11.00	--	1.35	163.35	
	For Seating side surfaces		22	0.45	--	0.45	4.46	
	For Planter Seating		11	5.00	--	1.35	74.25	
	For Planter Seating back rest wall		11	3.00	--	1.05	34.65	
	For Planter Seating back rest coping		11	3.00	--	0.30	9.90	
	Total						**276.71**	Sqm
10	Providing and laying **Black Lapotra Granite** stone flooring in linear as well as curvilinear portions of the building all complete as per the architectural drawings with 18mm thick stone slab over 20 mm (average) thick base of cement mortar 1:4 (1 cement : 4 coarse sand) laid and jointed with cement slurry and pointing with white cement slurry admixed with pigment of matching shade including rubbing , curing and polishing etc. all complete as specified and as directed by the Engineer-in-charge.							
	Unit	Sqm						
	For Seating		11	11.00	--	1.35	163.35	
	For Seating side surfaces		22	0.45	--	0.45	4.46	
	For Planter Seating		11	5.00	--	0.90	49.50	
	For Planter Seating back rest		11	3.00	--	0.60	19.80	
	For Planter Seating back rest coping		11	3.00	--	0.30	9.90	
	Total						**247.01**	Sqm
11	Providing and laying **60mm** thick factory made precast M -30 grade **Cement Concrete Paver Block** as per IRC SP 63:2018 & IS 15658 for Cycle Tracks & Pedestrian Footpaths of approved shape and colour, laid in required pattern and including over 30mm thick compacted bed of coarse sand, filling the joints with fine sand etc. all complete as per the direction of Engineer-in charge. (WMM/WBM Base to							
	Mix **1:3:6** Using **20 mm** nominal size graded crushed coarse aggregates							
	Unit	Sqm						
	For Footpath flooring		1	1959.00		--	1959.00	
	For Island flooring		1	48.00		--	48.00	
	Total						**2007.00**	Sqm

12	Supplying and fixing M15 grade precast **cement concrete Kerb stone**s for Roadway, Sidewalls and gutters fixed with CM 1:3 fixed and finsihed in line as per direction of Engineer in charge. (The cost of PCC shall be paid extra)							
	600 x 300 x 150 mm size							
	Unit	M						
	For Footpath Kerb		1	516.00	--	--	516.00	
	For Island Kerb		1	163.00	--	--	163.00	
	Total						**679.00**	M
13	Providing and laying of **hot applied thermoplastic compound** 2.5 mm thick including reflectorising glass beads @ 250 g/m2 area, thickness of 2.5 mm is exclusive of surface applied glass beads as per IRC:35:2015.The finished surface to be level, uniform and free							
	Unit	Sqm						
	For Stop Lane		20	7.00	0.25	--	35.00	
	Zebra Crossings		90	4.00	0.50	--	180.00	
	End Lane		1	586.00	0.25	--	146.50	
	Divider lane		1	691.00	0.25	--	172.75	
	Total						**534.25**	Sqm
14	Supplying and Fixing of **Molded Shank Raised Pavement Markers / Cat's Eye** made of polycarbonate and ABS moulded body and reflective panels with micro prismatic lens capable of providing total internal reflection of the light entering the lens face and shall support a load of 16000 kg tested in accordance to ASTM D 4280 Type H and complying to Specifications of Category A of MORTH Circular No RW/NH/33023/10-97 DO III Dt 11.06. 1997. The height, width and length shall not exceed 50 mm, 100 mm and 102 +/- 2 mm and with minimum reflective area of 13 cm2 on each side and the slope to the base shall be 35 +/- 5 degree. The strength of detachment of the integrated cylindrical shanks, (of diameter not less than 19 +/- 2 mm and height not less than 30+/- 2 mm) from the body is to be a minimum value of 500 Kg. Fixing will be by drilling holes on the road for the shanks to go inside, without nails and using epoxy resin based adhesive as per manufacturer's recommendation and complete as directed by the engineer The contractor shall submit a							
	Unit	Sqm						
	Roads		230	--	--	--	230.00	
	Total						**230.00**	Sqm
15	**Retro-Reflectorised Traffic Signs** - Providing and fixing of retro- reflectorised cautionary, mandatory and informatory sign as per IRC:67:2022 made of Class C Type XI retro reflective sheeting fixed over 2 mm thick aluminium sheeting vide clause 801.3, 3mm/4mm thick Aluminium composite material sheet depending on the size of the sign fixed over the back support frame of min 25 x 25 x 3mm angle mounted on a mild steel circular pipe 65 NB, 3.2 mm thickness firmly fixed to the ground by means of properly designed foundation with M25 grade cement concrete 45 cm x 45 cm x 60 cm, 60 cm below ground level as per approved drawing.The sign shall be maintained as per section 12 of IRC:67:2022. **90 cm**							
	Unit	Sqm						

	Roads		60	--	--	--	60.00	
	Total						**60.00**	Sqm
16	**Road Delineators** - Supplying and installation of delineators (road way indicators, hazard markers, object markers), 80-100 cm high above ground level, painted black and white in 15 cm wide strips, fitted with 80 x 100 mm rectangular or 75 mm dia circular reflectorised panels at the top, buried or pressed into the ground and conforming to IRC-79-2019 and the							
	Unit	Each						
	Roads		50	--	--	--	50.00	
	Total						**50.00**	Each
17	**Chevron Boards** - Supply and installation of retro- reflective **Chevron signboards of 600x450mm** made out of cube corner micro prismatic grade sheeting confirming to Type XI standards of IRC:67:2022 & ASTM D 4956-09 specification & fixed over 3 mm thick Aluminium Composite Panel sheet having minimum 0.30 mm thick aluminum skin on both sides & fixed over back support frame of 25x25x 3mm MS angle frame. Supported on 75 mm dia OR 75x75x6mm Mild steel with clear height of not less than 2.1 m from the ground level to the bottom of the Sign board & 60 cm below ground level. The sign post should be painted with one coat of red oxide paint and two coats of synthetic enamel paint of black and white colour with bands of 30 cm height, firmly fixed to the ground by means of foundation with M 20 grade cement, concrete foundation size of 45 cm x 45 cm x 60 cm							
	Unit	No						
	Roads		20	--	--	--	20.00	
	Total						**20.00**	No

18	**Tubular Marker / Spring post 700 mm (Flexible Bollards)** - Providing Tubular marker made up of Polyurethane used to divide opposing lanes of road users shall be fixible in nature. Tubular marker having height 700 mm shall be having 75 mm Reboundable work zone retroreflective sheeting as per ASTM 4956 S2 (Application of Tubular Marker shall be							
	Unit	No						
	Roads		40	--	--	--	40.00	
	Total						**40.00**	No
	NON SR ITEMS							
19	Providing and supplying of sadarahalli grey **granite bollards** of height 0.9 m and width of 0.45m width, cut to required shape including cost of all materials, labour, transportation etc							
	Unit	Nos						
							45.00	Nos

	Civil Sub Total							
	NANJAPPA JUNCTION ELECTRICAL ESTIMATE							
SL No	**DESCRIPTION**		**N**	**L**	**B**	**D**	**Qty**	**Unit**

	POLE LIGHT		
20	Supply and erection of 14 Feet Height Street Light Pole 14 Feet Height Street Light Pole on suitable cement concrete foundation with 2.5 Feet height dia 95 mm cast iron decorative round pedestal as per design weighing not less than 37Kgs, the pedestal shall be fitted with Class 'C' G.I.Pipe 7 Feet height 75 mm outer dia and 7 feet height top pieceouter dia of 65 mm fixed by measure of threading/welding/coupling complete. (excluding foundation).		
		12.00	Nos
	POLE LIGHT FIXTURE		
21	Supply of LED pole mounting type post top lantern with pressure die cast aluminium housing body for optimal thermal dissipation. Lamp compartment comprising of anti glare clear diffuser with Injection moulded polycarbonate/ clear glass material, delivering superior light outputRated life Burning Hrs 50000 hr@ Lumen Maintenance of 70%, CCT > 5500K, IP 66 optical and electrical compartment & impact resistance of complete luminaire >IK08. Power Factor>0.9 with mains, Surge Protection- Min 5KV along with Over voltage/Overload, short circuit/ miss-wiring protection. Compatible for pole mounting with outer dia of 40mm to 50mm. Universal Voltage driver to operate wide voltage range from 100V to 270V 50/60Hz application. Compliance to IS 10322/1 EC 60598, LM 79 & LM 80 Adherence with RoHS. UL approved MCPCB LED Efficiency>1301m/w, nominal CRI >75. Luminaire manufacturer should have in- house facility accredited by NABL/CPRI & any Government certified agency & Design & Development facility certified by ISO 9001:2008. Housing with supplier word mark /name shall be Engraved / Embossing on the		
	LED Post Top Lantern with 45 W		
		12.00	Nos
	FIXING CHARGES		
22	Fixing charges of post top/ Gate/ Garden fitting /LED on the existing CI / GI or any other pipe using required size of reducer, wiring using suitable wires		
	Pg No - 56, Item No - 13.6 of PWD Ele SR Vol 6, 23-24		
		12.00	Nos
	CONDUIT & ITS ACCESSORIES		
23	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply, including all CPVC plain & brass threaded fittings, including fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and testing of joints complete as per direction of Engineer in Charge. Internal work -		
	Total	620.00	Mtrs
	L.T. U.G. CABLES		
24	LT UG Cable. Heat shrinkable Straight Through Joint. 2.5 to 25 Sqmm		
		620.00	Mtrs
25	4 Core, 16 Sqmm, 30 No GI Wires (1.6 mm)		
		620.00	Mtrs
26	LABOUR for Aerial Bunched Conductor & Accessories. Stringing of 11 kV grade Aerial Bunched 3 Core cable of XLPE insulation of size 3x95 Sqmm + 1x70 Sqmm with Insulated		

		1240.00	Mtrs
27	Digging of Pit 1.8 Mtr depth for errection of 9 to 10 Mtr Long Steel/RCC/PSCC supports as per approved Drawing.		
	Hard Rock (By Chizling and/Or Wedging)		
		20.00	Mtrs
	WIRES & CABLES		
28	Supplying and drawing Flexible Multicore Cable manufactured with electrolytic grade flexible copper with low conductor confirming to IS:8130-1984 and (Virgin) PVC insulation sheathed suitable for working voltage upto 1100Volts as per IS-694:1990		
	3C X 4Sq.mm Copper Flexible		
		620.00	Mtrs
29	Supplying fixing and wiring earth electrode for grounding of lifts, transformers, DG sets etc. using 40 mm dia 2.9 mm thick 2.5m long GI pipe with GI funnel with mesh and suitable size reducer fixed on the top of the earth electrode.The funnel should be enclosed in a CC chamber of 400x400x400 mm with a cast iron cover. The earth electrode shall have staggered holes of 12 mm dia and the electrode should be covered 150 mm all-round with alternate layers of salt and charcoal from the bottom of the CC chamber. The connection from the		
	8 SWG GI Wire		
		24.00	Mtrs
30	Supplying and running of GI/Copper strips for grounding connections, using necessary fixing materials as required.		
	25mm x 3mm GI Patti		
		50.00	Rmt
31	Supplying and drawing 3 core flat PVC sheathed submersible pump cable manufactured with electrolytic grade copper with flexible copper with low resistance conductor confirming to IS:8130-1984 and virgin grade PVC insulation and powder coating extruded PVC sheathed suitable for working voltage upto 1100Volts as per IS-694:1990.		
	Submersible Flat Cable 3C X 4 sqm		
		110.00	Rmt
	CONTROL PANEL		
32	Supplying and fixing Moulded Case Circuit Breaker (MCCB) over the existing wood/panel board using necessary screws, bolts, nuts, necessary phase separators, handle and wiring complete. Protection of Overload and Short circuit with thermal Magnetic/Micro processor release and Earth Fault as per IS 13947. (Icu = Ics)		
	THREE POLE		
	200Amps 36kA.		
		1.00	EACH
33	Supplying and fixing miniature circuit breakers on existing MCB distribution boards using necessary fixing materials and 'C' Type curve, indicator ON/OFF, energy cross-3 with Short circuit breaking capacity of 10K and complete wiring as required confirming to IEC 60898.		

	6-32Amps TPN		
		2.00	EACH
34	Supplying fully automatic star-delta starter Unit push button type with suitable wires, 3 contactors, one adjustable thermal timer mounted on a common base plate held in steel enclosure for use on 400/440 volts 3 phase and wired after fixing to the existing wooden board for motor		
	Upto 12.5 HP		
		2.00	EACH
35	For Distribution Transformer Centre (DTC) MS Box for housing the ETV Meter 3 Phase 4 Wire 5 Amps, with associated LT CT 0.5 Accuracy Class, ring type, with wiring Clamps, B&N and all other accessories required. (EXCLUDING ETV METER) With CT Ratio 800/5		
		2.00	EACH
36	Supplying and fixing of Modular MCB Devices (Tripper) With Breaking capacity of 6kA.		
	16 - 32 A SP		
		2.00	EACH

BRUHAT BANGALORE MAHANAGARA PALIKE

Name of the Work : Improvements to 20 numbers major junctions with greenery to improve air quality around the junction

KONANAKUNTE CROSS CIVIL WORKS ESTIMATE

SL no	Description of work	Unit	Nos.	Dimension			Quantity	Unit
				Length	Breadth	Depth		
1	**Dismantling of existing structures** like culverts, bridges, retaining walls and other structure comprising of masonry, cement concrete, wood work, steel work, including T&P and scaffolding wherever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts complete as per specifications. i) Lime /Cement Concrete. I. By Manual Means: :B. Cement Concrete Grade M-15 & M-20. MORTH Specification No. 202.							
	Unit	Cum						
	Median		2	4.00	4.00	0.30	9.60	
	Total						**9.60**	Cum
2	**Earth work excavation** for Foundation by Mechanical means depth upto 1.50m, as per drawing and technical specifications, including setting out, shoring, strutting, barricading, caution lights, including cost of explosives, dressing of excavated surfaces, disposing off or levelling the excavated stuff or sorting & stacking the selected stuff for reuse in a radius of 50 m and lift upto 1.5 m including cost of labour, blasting materials, tools, usage of Machinery & all other appurtenaces required to complete the work complete.							
	In Hard Rock (requiring blasting) Depth upto 1.50m							
	Unit	Cum						
	For Footpath Kerb		1	768.00	0.45	0.30	103.68	
	For Island Kerb		1	112.00	0.45	0.30	15.12	
	For Pole Lights		6.00	0.60	0.60	0.60	1.30	
	Total						**120.10**	Cum
3	Loading and Unloading of Stone Boulder/Stone aggregates/Sand/Kankar/Moorum. (Tipper 5.5 m3)							
	Unit	Cum						
	Demolished works						**129.70**	
	Total						**129.70**	Cum
4	Providing and laying in position **Cement Concrete** for levelling course for all works in foundation. The granite/trap/basalt crushed graded coarse aggregates and fine aggregates as per relevant IS Codesmachine mixed, laid in layers not exceeding 150 mm thickness, well compacted using plate vibrators, including all lead & lifts, cost of all materials of quality, labour, Usage charges of machinery, curing, and all the other appurtenances required to complete the work as per technical specifications.							
	Mix **1:3:6** Using **20 mm** nominal size graded crushed coarse aggregates							
	Unit	Cum						
	For Median Kerb		1	16.00	0.45	0.15	1.08	
	For Island Kerb		1	106.00	0.45	0.15	7.16	
	For Island flooring		1	120.00		0.15	18.00	
	For Pole Lights		6.00	0.60	0.60	0.60	1.30	
	For Median retaining wall		2	4.50	0.60	0.30	1.62	
	Total						**29.15**	Cum
5	Providing, laying, spreading and compacting graded stone aggregate to **wet mix macadam** specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver/grader in sub-base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density. MORTH Specification No. 406							

	Unit	Cum						
	For Island flooring		1	120.00		0.15	18.00	
	Total						**18.00**	Cum
6	**Ready Mix Concrete** (RMC) with Cement & Cementitious Materials. Providing and laying in position Ready Mixed or Batch Mixed concrete as per IS 10262 mix design procedure for Cement Concrete works in all types of Structures other than Road works, using coarse aggregate and fine aggregate derived from natural sources, Ordinary Portland Cement (OPC) @ 75% & GGBS @ 25% proportion, admixtures to accelerate / retard setting of concrete, to improve durability and workability without impairing strength; including pumping of concrete to site of laying, curing, carriage for all leads; but excluding the cost of centering, shuttering, finishing and reinforcement as per direction of the Engineer-in-charge.							
	Unit	Cum						
	For Median		2	4.50	0.60	0.30	1.62	
	Total						**1.62**	Cum
7	Steel Fabrication. Supplying, fitting and placing TMT FE 550 / 550D **Steel Reinforcement** including cost of all materials, machinery, labour, cleaning, straightening, cutting, bending, hooking, laping/welding joints, tying with binding wire / soft annealed steel wire and other ancilary operations complete as per drawing and technical specification.All other type of structures							
	Unit	Tonne						
	Considering 80kg/Cum for item No.8	(1.62)*0.08					**0.13**	Tonne
8	Providing and laying **60mm** thick factory made precast M -30 grade **Cement Concrete Paver Block** as per IRC SP 63:2018 & IS 15658 for Cycle Tracks & Pedestrian Footpaths of approved shape and colour, laid in required pattern and including over 30mm thick compacted bed of coarse sand, filling the joints with fine sand etc. all complete as per the direction of Engineer-in charge. (WMM/WBM Base to be paid separately if necessary as per relevant technical specification).							
	Unit	Sqm						
	For Island flooring		1	120.00		--	120.00	
	Total						**120.00**	Sqm
9	Supplying and fixing M15 grade precast **cement concrete Kerb stone**s for Roadway, Sidewalls and gutters fixed with CM 1:3 fixed and finsihed in line as per direction of Engineer in charge. (The cost of PCC shall be paid extra)							
	600 x 300 x 150 mm size							
	Unit	M						

	For Median Kerb		1	16.00	--	--	16.00	
	For Island Kerb		1	106.00	--	--	106.00	
	Total						**122.00**	M
10	Providing and applying tack coat with **RS1 Bituminous Emulsion** using emulsion pressure distributor at the rate of 0.20 kg/m2 on the prepared bituminous surface cleaned with mechanical broom							
	Unit	Sqm						
	For HRPC		1	7.00	8.00	--	56.00	
	Total						**56.00**	Sqm
11	Providing and laying **Bituminous Concrete** with 100 TPH capacity hot mix plant batch type using crushed aggregates of specified grading, premixed with bituminous binder VG-30, @ 5.4 per cent of mix and filler, transporting the hot mix to work site, laying with mechanical paver finisher to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH specification clause No. 507 complete in all respects.							
	Unit	Cum						

	For HRPC							
	Below Cobble stone							
			1	7.00	3.00	0.05	1.05	
	For Slopes							
			2	7.00	3.00	0.19	7.88	
						0.5 x 2.5 x 0.15		
	Total						**8.93**	Cum
12	Providing and laying 100mm thick factory made **precast M - 40 grade Cement Concrete Paver Block** as per IRC SP 63:2018 & IS 15658 for Commercial Traffic Axle load repetitions more than 10MSA upto 20MSA for Industrial Streets, Bus & Truck parking of approved shape and colour, laid in required pattern an including over 40mm thick compacted bed of coarse sand, filling the joints with fine sand etc. all complete as per the direction of Engineer-in-charge.							
	Unit	Sqm						
	For HRPC		1	7.00	3.00	--	21.00	
	Total						**21.00**	Sqm
13	Providing and laying of **hot applied thermoplastic compound** 2.5 mm thick including reflectorising glass beads @ 250 g/m2 area, thickness of 2.5 mm is exclusive of surface applied glass beads as per IRC:35:2015.The finished surface to be level, uniform and free from streaks and holes.							
	Unit	Sqm						
	For HRPC Slopes		2	2.50	0.50	--	2.50	
	For Stop Lane		20	7.00	0.25	--	35.00	
	Zebra Crossings		90	4.00	0.50	--	180.00	
	Lanes		1	180.00	0.25	--	45.00	
	End Lane		1	853.00	0.25	--	213.25	
	Divider lane		1	809.00	0.25	--	202.25	
	For pattern on the road center		1	329.00		--	329.00	
	Total						**1007.00**	Sqm
14	Supplying and Fixing of **Molded Shank Raised Pavement Markers / Cat's Eye** made of polycarbonate and ABS moulded body and reflective panels with micro prismatic lens capable of providing total internal reflection of the light entering the lens face and shall support a load of 16000 kg tested in accordance to ASTM D 4280 Type H and complying to Specifications of Category A of MORTH Circular No RW/NH/33023/10-97 DO III Dt 11.06. 1997. The height, width and length shall not exceed 50 mm, 100 mm and 102 +/- 2 mm and with minimum reflective area of 13 cm2 on each side and the slope to the base shall be 35 +/- 5 degree. The strength of detachment of the integrated cylindrical shanks, (of diameter not less than 19 +/- 2 mm and height not less than 30+/- 2 mm) from the body is to be a minimum value of 500 Kg. Fixing will be by drilling holes on the road for the shanks to go inside, without nails and using epoxy resin based adhesive as per manufacturer's recommendation and complete as directed by the engineer.The contractor shall submit a two year warranty for satisfactory field performance including stipulated retro-reflectance of the reflecting panel, to the Engineer.							
	Unit	Sqm						
	Roads		230	--	--	--	230.00	
	Total						**230.00**	Sqm

15	**Retro-Reflectorised Traffic Signs** - Providing and fixing of retro- reflectorised cautionary, mandatory and informatory sign as per IRC:67:2022 made of Class C Type XI retro reflective sheeting fixed over 2 mm thick aluminium sheeting vide clause 801.3, 3mm/4mm thick Aluminium composite material sheet depending on the size of the sign fixed over the back support frame of min 25 x 25 x 3mm angle mounted on a mild steel circular pipe 65 NB, 3.2 mm thickness firmly fixed to the ground by means of properly designed foundation with M25 grade cement concrete 45 cm x 45 cm x 60 cm, 60 cm below ground level as per approved drawing.The sign shall be maintained as per section 12 of IRC:67:2022. **90 cm equilateral triangle**							
	Unit	Sqm						

	Roads		60	--	--	--	60.00	
	Total						**60.00**	Sqm
16	**Road Delineators** - Supplying and installation of delineators (road way indicators, hazard markers, object markers), 80-100 cm high above ground level, painted black and white in 15 cm wide strips, fitted with 80 x 100 mm rectangular or 75 mm dia circular reflectorised panels at the top, buried or pressed into the ground and conforming to IRC-79-2019 and the drawings.							
	Unit	Each						
	Roads		50	--	--	--	50.00	
	Total						**50.00**	Each
17	**Chevron Boards** - Supply and installation of retro- reflective **Chevron signboards of 600x450mm** made out of cube corner micro prismatic grade sheeting confirming to Type XI standards of IRC:67:2022 & ASTM D 4956-09 specification & fixed over 3 mm thick Aluminium Composite Panel sheet having minimum 0.30 mm thick aluminum skin on both sides & fixed over back support frame of 25x25x 3mm MS angle frame. Supported on 75 mm dia OR 75x75x6mm Mild steel with clear height of not less than 2.1 m from the ground level to the bottom of the Sign board & 60 cm below ground level. The sign post should be painted with one coat of red oxide paint and two coats of synthetic enamel paint of black and white colour with bands of 30 cm height, firmly fixed to the ground by means of foundation with M 20 grade cement, concrete foundation size of 45 cm x 45 cm x 60 cm including cost & conveyance of all materials, equipment, machinery & Labour with all leads and lifts for satisfactory completion of the work as directed by Engineer incharge.							
	Unit	No						
	Roads		20	--	--	--	20.00	
	Total						**20.00**	No
18	**Tubular Marker / Spring post 700 mm (Flexible Bollards)** - Providing Tubular marker made up of Polyurethane used to divide opposing lanes of road users shall be fixible in nature. Tubular marker having height 700 mm shall be having 75 mm Reboundable work zone retroreflective sheeting as per ASTM 4956 S2 (Application of Tubular Marker shall be done as per IRC:SP 55:2014)							
	Unit	No						
	Roads		40	--	--	--	40.00	
	Total						**40.00**	No
	NON SR ITEMS							
19	Providing and supplying of sadarahalli grey **granite bollards** of height 0.9 m and width of 0.45m width, cut to required shape including cost of all materials, labour, transportation etc							
	Unit	Nos						
							56.00	Nos

	Civil Sub Total							
	KONANAKUNTE CROSS ELECTRICAL ESTIMATE							
SL No	**DESCRIPTION**		**N**	**L**	**B**	**D**	**Qty**	**Unit**
	POLE LIGHT							
20	Supply and erection of 14 Feet Height Street Light Pole 14 Feet Height Street Light Pole on suitable cement concrete foundation with 2.5 Feet height dia 95 mm cast iron decorative round pedestal as per design weighing not less than 37Kgs, the pedestal shall be fitted with Class 'C' G.I.Pipe 7 Feet height 75 mm outer dia and 7 feet height top pieceouter dia of 65 mm fixed by measure of threading/welding/coupling complete. (excluding foundation).							
							6.00	Nos
	POLE LIGHT FIXTURE							

21	Supply of LED pole mounting type post top lantern with pressure die cast aluminium housing body for optimal thermal dissipation. Lamp compartment comprising of anti glare clear diffuser with Injection moulded polycarbonate/ clear glass material, delivering superior light outputRated life Burning Hrs 50000 hr@ Lumen Maintenance of 70%, CCT > 5500K, IP 66 optical and electrical compartment & impact resistance of complete luminaire >IK08. Power Factor>0.9 with mains, Surge Protection- Min 5KV along with Over voltage/Overload, short circuit/ miss-wiring protection. Compatible for pole mounting with outer dia of 40mm to 50mm. Universal Voltage driver to operate wide voltage range from 100V to 270V 50/60Hz application. Compliance to IS 10322/1 EC 60598, LM 79 & LM 80 Adherence with RoHS. UL approved MCPCB LED Efficiency>1301m/w, nominal CRI >75. Luminaire manufacturer should have in- house facility accredited by NABL/CPRI & any Government certified agency & Design & Development facility certified by ISO 9001:2008. Housing with supplier word mark /name shall be Engraved / Embossing on the die cast housing/ Body part Warranty of 2 Years against anymanufacturing defect working under standard electrical conditions as mentioned above should be given by LED manufacturer & Cree/Nichia/ Lumileds/Osram make LED Source.		
	LED Post Top Lantern with 45 W		
		6.00	Nos
	FIXING CHARGES		
22	Fixing charges of post top/ Gate/ Garden fitting /LED on the existing CI / GI or any other pipe using required size of reducer, wiring using suitable wires		
		6.00	Nos
	CONDUIT & ITS ACCESSORIES		
23	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply, including all CPVC plain & brass threaded fittings, including fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and testing of joints complete as per direction of Engineer in Charge. Internal work - Exposed on wall.50 mm nominal dia Pipes		
	Total	240.00	Mtrs
	L.T. U.G. CABLES		
24	LT UG Cable. Heat shrinkable Straight Through Joint. 2.5 to 25 Sqmm		
		240.00	Mtrs
25	4 Core, 16 Sqmm, 30 No GI Wires (1.6 mm)		
		240.00	Mtrs
26	LABOUR for Aerial Bunched Conductor & Accessories. Stringing of 11 kV grade Aerial Bunched 3 Core cable of XLPE insulation of size 3x95 Sqmm + 1x70 Sqmm with Insulated Messenger Wire		
		240.00	Mtrs
27	Digging of Pit 1.8 Mtr depth for errection of 9 to 10 Mtr Long Steel/RCC/PSCC supports as per approved Drawing.		
	Hard Rock (By Chizling and/Or Wedging)		
		20.00	Mtrs
	WIRES & CABLES		
28	Supplying and drawing Flexible Multicore Cable manufactured with electrolytic grade flexible copper with low conductor confirming to IS:8130-1984 and (Virgin) PVC insulation sheathed suitable for working voltage upto 1100Volts as per IS-694:1990		
	3C X 4Sq.mm Copper Flexible		
		240.00	Mtrs
29	Supplying fixing and wiring earth electrode for grounding of lifts, transformers, DG sets etc. using 40 mm dia 2.9 mm thick 2.5m long GI pipe with GI funnel with mesh and suitable size reducer fixed on the top of the earth electrode.The funnel should be enclosed in a CC chamber of 400x400x400 mm with a cast iron cover. The earth electrode shall have staggered holes of 12 mm dia and the electrode should be covered 150 mm all-round with alternate layers of salt and charcoal from the bottom of the CC chamber. The connection from the electrode is to be established through GI strip using GI bolts and nuts.		
	8 SWG GI Wire		

		12.00	Mtrs
30	Supplying and running of GI/Copper strips for grounding connections, using necessary fixing materials as required.		
	25mm x 3mm GI Patti		
		50.00	Rmt
31	Supplying and drawing 3 core flat PVC sheathed submersible pump cable manufactured with electrolytic grade copper with flexible copper with low resistance conductor confirming to IS:8130-1984 and virgin grade PVC insulation and powder coating extruded PVC sheathed suitable for working voltage upto 1100Volts as per IS-694:1990.		
	Submersible Flat Cable 3C X 4 sqm		
		110.00	Rmt
	CONTROL PANEL		
32	Supplying and fixing Moulded Case Circuit Breaker (MCCB) over the existing wood/panel board using necessary screws, bolts, nuts, necessary phase separators, handle and wiring complete. Protection of Overload and Short circuit with thermal Magnetic/Micro processor release and Earth Fault as per IS 13947. (Icu = Ics)		
	THREE POLE		
	200Amps 36kA.		
		1.00	EACH
33	Supplying and fixing miniature circuit breakers on existing MCB distribution boards using necessary fixing materials and 'C' Type curve, indicator ON/OFF, energy cross-3 with Short circuit breaking capacity of 10K and complete wiring as required confirming to IEC 60898.		
	6-32Amps TPN		
		2.00	EACH
34	Supplying fully automatic star-delta starter Unit push button type with suitable wires, 3 contactors, one adjustable thermal timer mounted on a common base plate held in steel enclosure for use on 400/440 volts 3 phase and wired after fixing to the existing wooden board for motor		
	Upto 12.5 HP		
		2.00	EACH
35	For Distribution Transformer Centre (DTC) MS Box for housing the ETV Meter 3 Phase 4 Wire 5 Amps, with associated LT CT 0.5 Accuracy Class, ring type, with wiring Clamps, B&N and all other accessories required. (EXCLUDING ETV METER) With CT Ratio 800/5 for 500 kVA DTC		
		2.00	EACH
36	Supplying and fixing of Modular MCB Devices (Tripper) With Breaking capacity of 6kA.		
	16 - 32 A SP		
		2.00	EACH

BRUHAT BANGALORE MAHANAGARA PALIKE

Name of the Work : Improvements to 20 numbers major junctions with greenery to improve air quality around the junction

SUBRAMANYAPURA ROAD JUNCTION CIVIL WORKS ESTIMATE

SL no	Description of work	Unit	Nos.	Dimension			Quantity	Unit
				Length	Breadth	Depth		
1	**Dismantling of cement concrete pavement** by mechanical means using pneumatic tools, breaking to pieces not exceeding 0.02 m3 in volume and stock piling at designated locations and disposal of dismantled materials and stacking serviceable and unserviceable materials separately.							
	Unit	Cum						
	Footpath Flooring		1	520.00		0.15	78.00	
	Total						**78.00**	Cum
2	**Dismantling kerb stone** by manual means and disposal of dismantled material with all lifts and							
	Unit	Cum						
	Kerbs		1	310.00		0.15	46.50	
	Total						**46.50**	Cum
3	**Earth work excavation** for Foundation by Mechanical means depth upto 1.50m, as per drawing and technical specifications, including setting out, shoring, strutting, barricading, caution lights, including cost of explosives, dressing of excavated surfaces, disposing off or levelling the excavated stuff or sorting & stacking the selected stuff for reuse in a radius of 50 m and lift upto 1.5 m including cost of labour, blasting materials, tools, usage of Machinery & all other appurtenaces required to complete the work complete.							
	In Hard Rock (requiring blasting) Depth upto 1.50m							
	Unit	Cum						
	For Footpath Kerb		1	409.00	0.45	0.30	55.22	
	For Island Kerb		1	413.00	0.45	0.30	55.76	
	For seating 1		2	20.00	0.45	0.60	10.80	
	For Planter Seating 1		2	10.00	0.45	0.60	5.40	
	For seating 2		2	16.00	0.45	0.60	8.64	
	For Planter Seating 2		2	8.00	0.45	0.60	4.32	
	For Pole Lights		40.00	0.60	0.60	0.60	8.64	
	Total						**148.77**	Cum
4	Loading and Unloading of Stone Boulder/Stone aggregates/Sand/Kankar/Moorum. (Tipper 5.5							
	Unit	Cum						
	Demolished works						**124.50**	
	Total						**124.50**	Cum

5	Providing and laying in position **Cement Concrete** for levelling course for all works in foundation. The granite/trap/basalt crushed graded coarse aggregates and fine aggregates as per relevant IS Codesmachine mixed, laid in layers not exceeding 150 mm thickness, well compacted using plate vibrators, including all lead & lifts, cost of all materials of quality, labour, Usage charges of machinery, curing, and all the other appurtenances required to complete the work as per technical specifications.							
	Mix **1:3:6** Using **20 mm** nominal size graded crushed coarse aggregates							
	Unit	Cum						
	For Footpath Kerb		1	409.00	0.45	0.15	27.61	
	For Island Kerb		1	413.00	0.45	0.15	27.88	
	For Footpath flooring		1	584.00		0.15	87.60	
	For Island flooring		1	375.00		0.15	56.25	
	For seating 1		2	20.00	0.45	0.15	2.70	
	For Planter Seating 1		2	10.00	0.45	0.15	1.35	
	For seating 2		2	16.00	0.45	0.15	2.16	
	For Planter Seating 2		2	8.00	0.45	0.15	1.08	
	For Pole Lights		40.00	0.60	0.60	0.60	8.64	
	Total						**215.27**	Cum
6	Providing, laying, spreading and compacting graded stone aggregate to **wet mix macadam** specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver/grader in sub-base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density. MORTH Specification No. 406							
	Unit	Cum						
	For Footpath Kerb		1	409.00	0.45	0.15	27.61	
	For Island Kerb		1	413.00	0.45	0.15	27.88	
	For Footpath flooring		1	584.00		0.15	87.60	
	For Island flooring		1	375.00		0.15	56.25	
	For seating 1		2	20.00	0.45	0.15	2.70	
	For Planter Seating 1		2	10.00	0.45	0.15	1.35	
	For seating 2		2	16.00	0.45	0.15	2.16	
	For Planter Seating 2		2	8.00	0.45	0.15	1.08	
	Total						**206.63**	Cum
7	Providing **Coursed rubble masonry** (first sort) with hard stone in foundation and plinth with Cement mortar 1:6 (1 cement : 6 coarse sand).							
	Unit	Cum						
	For seating 1		2	20.00	0.45	0.45	8.10	
	For Planter Seating 1		2	10.00	0.45	0.45	4.05	
	For seating 2		2	16.00	0.45	0.45	6.48	
	For Planter Seating 2		2	8.00	0.45	0.45	3.24	
	Total						**21.87**	Cum

8	Providing **Brick work** with common burnt clay Non Modular bricks of class designation 3.5 in superstructure above plinth level in all shapes and sizes in Cement mortar 1:6 (1 cement : 6 coarse sand) including cost of all materials, labour, scaffolding and usage charges of machinery & other incidental charges complete as per the direction of engineer incharge of work.							
	Unit	Cum						
	For seating 1		2	20.00	0.45	0.45	8.10	
	For Planter Seating 1		2	10.00	0.45	0.45	4.05	
	For Planter Seating 1 backrest		2	10.00	0.45	1.05	9.45	
	For seating 2		2	16.00	0.45	0.45	6.48	
	For Planter Seating 2		2	8.00	0.45	0.45	3.24	
	For Planter Seating 2 backrest		2	8.00	0.45	1.05	7.56	
	Total						**28.08**	Cum
9	Providing **15 mm cement plaster** on rough side of single or half brick wall finished with a floating coat of neat cement of mix 1:3 (1 cement: 3 fine sand) including rounding off corners wherever required smooth rendering, providing and removing scaffolding, including cost of materials, labour, curing complete as per specifications and as per directions of Engineer-in-charge.							
	Unit	Sqm						
	For Seating 1		2	20.00	--	1.35	54.00	
	For Seating 1 side surfaces		4	0.45	--	0.45	0.81	
	For Planter Seating 1		2	10.00	--	1.35	27.00	
	For Planter Seating 1 back rest wall		2	6.00	--	1.05	12.60	
	For Planter Seating 1 back rest wall coping		2	6.00	--	0.30	3.60	
	For seating 2		2	16.00	--	1.35	43.20	
	For Seating 2 side surfaces		4	0.45	--	0.45	0.81	
	For Planter Seating 2		2	8.00	--	0.90	14.40	
	For Planter Seating 2 back rest		2	6.00	--	0.60	7.20	
	For Planter Seating 2 back rest wall coping		2	6.00	--	0.30	3.60	
	Total						**167.22**	Sqm
10	Providing and laying **Black Lapotra Granite** stone flooring in linear as well as curvilinear portions of the building all complete as per the architectural drawings with 18mm thick stone slab over 20 mm (average) thick base of cement mortar 1:4 (1 cement : 4 coarse sand) laid and jointed with cement slurry and pointing with white cement slurry admixed with pigment of matching shade including rubbing , curing and polishing etc. all complete as specified and as directed by the Engineer-in-charge.							
	Unit	Sqm						
	For Seating 1		2	20.00	--	1.35	54.00	
	For Seating 1 side surfaces		4	0.45	--	0.45	0.81	
	For Planter Seating 1		2	10.00	--	0.90	18.00	
	For Planter Seating 1 back rest		2	6.00	--	0.60	7.20	
	For Planter Seating 1 back rest wall coping		2	6.00	--	0.30	3.60	
	For seating 2		2	16.00	--	1.50	48.00	
	For Seating 2 side surfaces		4	0.45	--	0.45	0.81	
	For Planter Seating 2		2	8.00	--	0.90	14.40	

	For Planter Seating 2 back rest		2	6.00	--	0.60	7.20	
	For Planter Seating 2 back rest wall coping		2	6.00	--	0.30	3.60	
	Cladding for Bridge wall		2	17.00	--	0.90	30.60	
	Coping for Bridge wall		2	17.00	--	0.45	15.30	
	Total						**203.52**	Sqm
11	Providing and laying **60mm** thick factory made precast M -30 grade **Cement Concrete Paver Block** as per IRC SP 63:2018 & IS 15658 for Cycle Tracks & Pedestrian Footpaths of approved shape and colour, laid in required pattern and including over 30mm thick compacted bed of coarse sand, filling the joints with fine sand etc. all complete as per the direction of Engineer-in charge. (WMM/WBM Base to be paid separately if necessary as per relevant technical							
	Unit	Sqm						
	For Footpath flooring		1	584.00		--	584.00	
	Total						**584.00**	Sqm
12	Providing and laying flooring and steps fine dressed **granite stone slabs 40 mm** thick on cement mortar bed 1:6, 25 mm thick, and pointed with cement mortar 1:3 over existing cement concrete bed , including cost of materials, mortar, labour, curing complete as per specifications.							
	Unit	Sqm						
	Island Flooring		1	375.00			375.00	
	Total						**375.00**	Sqm
13	Supplying and fixing M15 grade precast **cement concrete Kerb stone**s for Roadway, Sidewalls and gutters fixed with CM 1:3 fixed and finsihed in line as per direction of Engineer in charge. (The cost of PCC shall be paid extra)							
	600 x 300 x 150 mm size							
	Unit	M						
	For Footpath Kerb		1	409.00	--	--	409.00	
	For Island Kerb		1	413.00	--	--	413.00	
	Total						**822.00**	M
14	Providing and applying tack coat with **RS1 Bituminous Emulsion** using emulsion pressure distributor at the rate of 0.20 kg/m2 on the prepared bituminous surface cleaned with mechanical broom							
	Unit	Sqm						
	For HRPC		2	15.00	8.00	--	240.00	
	Total						**240.00**	Sqm
15	Providing and laying **Bituminous Concrete** with 100 TPH capacity hot mix plant batch type using crushed aggregates of specified grading, premixed with bituminous binder VG-30, @ 5.4 per cent of mix and filler, transporting the hot mix to work site, laying with mechanical paver finisher to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH specification clause No. 507 complete in							
	Unit	Cum						

	For HRPC							
	Below Cobble stone							
			1	15.00	3.00	0.05	2.25	
	For Slopes							
			2	15.00	0.19	0.05	0.28	
						0.5 x 2.5 x 0.15		
	Total						**2.53**	Cum
16	Providing and laying 100mm thick factory made **precast M - 40 grade Cement Concrete Paver Block** as per IRC SP 63:2018 & IS 15658 for Commercial Traffic Axle load repetitions more than 10MSA upto 20MSA for Industrial Streets, Bus & Truck parking of approved shape and colour, laid in required pattern an including over 40mm thick compacted bed of coarse sand, filling the joints with fine sand etc. all complete as per the direction of Engineer-in-charge.							
	Unit	Sqm						
	For HRPC		2	15.00	3.00	--	90.00	
	Total						**90.00**	Sqm
17	Providing and laying of **hot applied thermoplastic compound** 2.5 mm thick including reflectorising glass beads @ 250 g/m2 area, thickness of 2.5 mm is exclusive of surface applied glass beads as per IRC:35:2015.The finished surface to be level, uniform and free from streaks and							
	Unit	Sqm						
	For HRPC Slopes		2	2.50	0.50	--	2.50	
	For Stop Lane		20	7.00	0.25	--	35.00	
	Zebra Crossings		90	4.00	0.50	--	180.00	
	End Lane		1	936.00	0.25	--	234.00	
	Divider lane		1	467.00		--	467.00	
	Total						**918.50**	Sqm
18	Supplying and Fixing of **Molded Shank Raised Pavement Markers / Cat's Eye** made of polycarbonate and ABS moulded body and reflective panels with micro prismatic lens capable of providing total internal reflection of the light entering the lens face and shall support a load of 16000 kg tested in accordance to ASTM D 4280 Type H and complying to Specifications of Category A of MORTH Circular No RW/NH/33023/10-97 DO III Dt 11.06. 1997. The height, width and length shall not exceed 50 mm, 100 mm and 102 +/- 2 mm and with minimum reflective area of 13 cm2 on each side and the slope to the base shall be 35 +/- 5 degree. The strength of detachment of the integrated cylindrical shanks, (of diameter not less than 19 +/- 2 mm and height not less than 30+/- 2 mm) from the body is to be a minimum value of 500 Kg. Fixing will be by drilling holes on the road for the shanks to go inside, without nails and using epoxy resin based adhesive as per manufacturer's recommendation and complete as directed by the engineer.The contractor shall submit a two year warranty for satisfactory field performance							
	Unit	Sqm						
	Roads		230	--	--	--	230.00	
	Total						**230.00**	Sqm

19	**Retro-Reflectorised Traffic Signs** - Providing and fixing of retro- reflectorised cautionary, mandatory and informatory sign as per IRC:67:2022 made of Class C Type XI retro reflective sheeting fixed over 2 mm thick aluminium sheeting vide clause 801.3, 3mm/4mm thick Aluminium composite material sheet depending on the size of the sign fixed over the back support frame of min 25 x 25 x 3mm angle mounted on a mild steel circular pipe 65 NB, 3.2 mm thickness firmly fixed to the ground by means of properly designed foundation with M25 grade cement concrete 45 cm x 45 cm x 60 cm, 60 cm below ground level as per approved drawing.The sign shall be maintained as per section 12 of IRC:67:2022. **90 cm equilateral triangle**							
	Unit	Sqm						
	Roads		60	--	--	--	60.00	
	Total						**60.00**	Sqm
20	**Road Delineators** - Supplying and installation of delineators (road way indicators, hazard markers, object markers), 80-100 cm high above ground level, painted black and white in 15 cm wide strips, fitted with 80 x 100 mm rectangular or 75 mm dia circular reflectorised panels at the top, buried or pressed into the ground and conforming to IRC-79-2019 and the drawings.							
	Unit	Each						
	Roads		50	--	--	--	50.00	
	Total						**50.00**	Each
21	**Chevron Boards** - Supply and installation of retro- reflective **Chevron signboards of 600x450mm** made out of cube corner micro prismatic grade sheeting confirming to Type XI standards of IRC:67:2022 & ASTM D 4956-09 specification & fixed over 3 mm thick Aluminium Composite Panel sheet having minimum 0.30 mm thick aluminum skin on both sides & fixed over back support frame of 25x25x 3mm MS angle frame. Supported on 75 mm dia OR 75x75x6mm Mild steel with clear height of not less than 2.1 m from the ground level to the bottom of the Sign board & 60 cm below ground level. The sign post should be painted with one coat of red oxide paint and two coats of synthetic enamel paint of black and white colour with bands of 30 cm height, firmly fixed to the ground by means of foundation with M 20 grade cement, concrete foundation size of 45 cm x 45 cm x 60 cm including cost & conveyance of all materials, equipment, machinery &							
	Unit	No						
	Roads		20	--	--	--	20.00	
	Total						**20.00**	No
22	**Tubular Marker / Spring post 700 mm (Flexible Bollards)** - Providing Tubular marker made up of Polyurethane used to divide opposing lanes of road users shall be fixible in nature. Tubular marker having height 700 mm shall be having 75 mm Reboundable work zone retroreflective sheeting as per ASTM 4956 S2 (Application of Tubular Marker shall be done as per IRC:SP							
	Unit	No						
	Roads		40	--	--	--	40.00	
	Total						**40.00**	No
	NON SR ITEMS							

23	Providing and supplying of sadarahalli grey **granite bollards** of height 0.9 m and width of 0.45m width, cut to required shape including cost of all materials, labour, transportation etc							
	Unit	Nos						
							90.00	Nos
24	Providing and fabricating **Canopy structure** made of MS using tubular Poles/sections of required size as per design approved by Engineer in chief including cost of all materials, labour, transportation etc							
	Unit	Nos						
	For Seating Shelter						**4.00**	Nos
25	Proving and fixing the **Tensile Membrane** made from Germany make, male mehler, Valmex FR 900 TYPE II, with 100% white colour, PVDF- lacauer on both side, protected against microbial and fungal attack, UV - protected with weight of 900/GSM with 05 Years Warranty Approved by BBMP							
	Unit	Sqm						
	For Seating Shelter		4		60.00	--	240.00	
	Total						**240.00**	Nos
	Civil Sub Total							

SUBRAMANYAPURA ROAD JUNCTION ELECTRICAL ESTIMATE

SL No	DESCRIPTION		N	L	B	D	Qty	Unit
	POLE LIGHT							
26	Supply and erection of 14 Feet Height Street Light Pole 14 Feet Height Street Light Pole on suitable cement concrete foundation with 2.5 Feet height dia 95 mm cast iron decorative round pedestal as per design weighing not less than 37Kgs, the pedestal shall be fitted with Class 'C' G.I.Pipe 7 Feet height 75 mm outer dia and 7 feet height top pieceouter dia of 65 mm fixed by measure of threading/welding/coupling complete. (excluding foundation).							
							40.00	Nos
	POLE LIGHT FIXTURE							
27	Supply of LED pole mounting type post top lantern with pressure die cast aluminium housing body for optimal thermal dissipation. Lamp compartment comprising of anti glare clear diffuser with Injection moulded polycarbonate/ clear glass material, delivering superior light outputRated life Burning Hrs 50000 hr@ Lumen Maintenance of 70%, CCT > 5500K, IP 66 optical and electrical compartment & impact resistance of complete luminaire >IK08. Power Factor>0.9 with mains, Surge Protection- Min 5KV along with Over voltage/Overload, short circuit/ miss-wiring protection. Compatible for pole mounting with outer dia of 40mm to 50mm. Universal Voltage driver to operate wide voltage range from 100V to 270V 50/60Hz application. Compliance to IS 10322/1 EC 60598, LM 79 & LM 80 Adherence with RoHS. UL approved MCPCB LED Efficiency>1301m/w, nominal CRI >75. Luminaire manufacturer should have in- house facility accredited by NABL/CPRI & any Government certified agency & Design & Development facility certified by ISO 9001:2008. Housing with supplier word mark /name shall be Engraved / Embossing on the die cast housing/ Body part Warranty of 2 Years against anymanufacturing							
	LED Post Top Lantern with 45 W							
							40.00	Nos
	FIXING CHARGES							

28	Fixing charges of post top/ Gate/ Garden fitting /LED on the existing CI / GI or any other pipe using required size of reducer, wiring using suitable wires		
		40.00	Nos
	CONDUIT & ITS ACCESSORIES		
29	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply, including all CPVC plain & brass threaded fittings, including fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and testing of joints complete as per direction of Engineer in Charge. Internal work - Exposed on		
	Total	620.00	Mtrs
	L.T. U.G. CABLES		
30	LT UG Cable. Heat shrinkable Straight Through Joint. 2.5 to 25 Sqmm		
		620.00	Mtrs
31	4 Core, 16 Sqmm, 30 No GI Wires (1.6 mm)		
		620.00	Mtrs
32	LABOUR for Aerial Bunched Conductor & Accessories. Stringing of 11 kV grade Aerial Bunched 3 Core cable of XLPE insulation of size 3x95 Sqmm + 1x70 Sqmm with Insulated Messenger Wire		
		1240.00	Mtrs
33	Digging of Pit 1.8 Mtr depth for errection of 9 to 10 Mtr Long Steel/RCC/PSCC supports as per approved Drawing.		
	Hard Rock (By Chizling and/Or Wedging)		
		20.00	Mtrs
	WIRES & CABLES		
34	Supplying and drawing Flexible Multicore Cable manufactured with electrolytic grade flexible copper with low conductor confirming to IS:8130-1984 and (Virgin) PVC insulation sheathed suitable for working voltage upto 1100Volts as per IS-694:1990		
	3C X 4Sq.mm Copper Flexible		
		620.00	Mtrs
35	Supplying fixing and wiring earth electrode for grounding of lifts, transformers, DG sets etc. using 40 mm dia 2.9 mm thick 2.5m long GI pipe with GI funnel with mesh and suitable size reducer fixed on the top of the earth electrode.The funnel should be enclosed in a CC chamber of 400x400x400 mm with a cast iron cover. The earth electrode shall have staggered holes of 12 mm dia and the electrode should be covered 150 mm all-round with alternate layers of salt and charcoal from the bottom of the CC chamber. The connection from the electrode is to be		
	8 SWG GI Wire		
		80.00	Mtrs
36	Supplying and running of GI/Copper strips for grounding connections, using necessary fixing materials as required.		
	25mm x 3mm GI Patti		
		50.00	Rmt

37	Supplying and drawing 3 core flat PVC sheathed submersible pump cable manufactured with electrolytic grade copper with flexible copper with low resistance conductor confirming to IS:8130-1984 and virgin grade PVC insulation and powder coating extruded PVC sheathed suitable for working voltage upto 1100Volts as per IS-694:1990.		
	Submersible Flat Cable 3C X 4 sqm		
		110.00	Rmt
	CONTROL PANEL		
38	Supplying and fixing Moulded Case Circuit Breaker (MCCB) over the existing wood/panel board using necessary screws, bolts, nuts, necessary phase separators, handle and wiring complete. Protection of Overload and Short circuit with thermal Magnetic/Micro processor release and Earth Fault as per IS 13947. (Icu = Ics)		
	THREE POLE		
	200Amps 36kA.		
		1.00	EACH
39	Supplying and fixing miniature circuit breakers on existing MCB distribution boards using necessary fixing materials and 'C' Type curve, indicator ON/OFF, energy cross-3 with Short circuit breaking capacity of 10K and complete wiring as required confirming to IEC 60898.		
	6-32Amps TPN		
		2.00	EACH
40	Supplying fully automatic star-delta starter Unit push button type with suitable wires, 3 contactors, one adjustable thermal timer mounted on a common base plate held in steel enclosure for use on 400/440 volts 3 phase and wired after fixing to the existing wooden board for motor		
	Upto 12.5 HP		
		2.00	EACH
41	For Distribution Transformer Centre (DTC) MS Box for housing the ETV Meter 3 Phase 4 Wire 5 Amps, with associated LT CT 0.5 Accuracy Class, ring type, with wiring Clamps, B&N and all other accessories required. (EXCLUDING ETV METER) With CT Ratio 800/5 for 500 kVA DTC		
		2.00	EACH
42	Supplying and fixing of Modular MCB Devices (Tripper) With Breaking capacity of 6kA.		
	16 - 32 A SP		
		2.00	EACH
	NON SR ITEMS		
43	Supply and Installation of 50 watt UPLIGHTERS LED light with 2 way connector for each light. Technical Specification • Luminaire made up of die cast dark grey powder coated aluminium alloy with non corrosive SS fasteners with low copper content. • Luminaire prewired with LED driver and Suitable for operation on 240V, 50Hz single phase ac supply. IP67 , mechanical resistance IK08	25.00	EACH

44	Supply and Installation of 10watt focus WALL LED light with 2 way connector for each light. Technical Specification • Luminaire made up of die cast dark grey powder coated aluminium alloy with non corrosive SS fasteners with low copper content. • Luminaire prewired with LED driver and Suitable for operation on 240V, 50Hz single phase ac supply, IP67 , mechanical resistance IK08	25.00	EACH

BRUHAT BANGALORE MAHANAGARA PALIKE

Name of the Work : Improvements to 20 numbers major junctions with greenery to improve air quality around the junction

CNR RAO UNDERPASS (JUNCTION) CIVIL WORKS ESTIMATE

SL no	Description of work	Unit	Nos.	Dimension			Quantity	Unit
				Length	Breadth	Depth		
1	**Earth work excavation** for Foundation by Mechanical means depth upto 1.50m, as per drawing and technical specifications, including setting out, shoring, strutting, barricading, caution lights, including cost of explosives, dressing of excavated surfaces, disposing off or levelling the excavated stuff or sorting & stacking the selected stuff for reuse in a radius of 50 m and lift upto 1.5 m including cost of labour, blasting materials, tools, usage of Machinery & all other appurtenaces required to complete the work complete.							
	In Hard Rock (requiring blasting) Depth upto 1.50m							
	Unit	Cum						
	For Footpath Kerb		1	174.00	0.45	0.30	23.49	
	For Island Kerb		1	74.00	0.45	0.30	9.99	
	For Landscape retaining wall		1	42.00	0.60	0.60	15.12	
	For Pole Lights		12.00	0.60	0.60	0.60	2.59	
	Total						**51.19**	Cum
2	Loading and Unloading of Stone Boulder/Stone aggregates/Sand/Kankar/Moorum. (Tipper							
	Unit	Cum						
	Demolished works						**0.00**	
	Total						**0.00**	Cum
3	Providing and laying in position **Cement Concrete** for levelling course for all works in foundation. The granite/trap/basalt crushed graded coarse aggregates and fine aggregates as per relevant IS Codesmachine mixed, laid in layers not exceeding 150 mm thickness, well compacted using plate vibrators, including all lead & lifts, cost of all materials of quality, labour, Usage charges of machinery, curing, and all the other appurtenances required to complete the work as per technical specifications.							
	Mix **1:3:6** Using **20 mm** nominal size graded crushed coarse aggregates							
	Unit	Cum						
	For Footpath Kerb		1	174.00	0.45	0.15	11.75	
	For Island Kerb		1	74.00	0.45	0.15	5.00	
	For Footpath flooring		1	164.00		0.15	24.60	
	For Island flooring		1	96.00		0.15	14.40	
	For Landscape retaining wall		1	42.00	0.60	0.15	3.78	
	For Pole Lights		12.00	0.60	0.60	0.60	2.59	
	Total						**62.11**	Cum

4	Providing, laying, spreading and compacting graded stone aggregate to **wet mix macadam** specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver/grader in sub-base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density. MORTH Specification							
	Unit	Cum						
	For Footpath Kerb		1	174.00	0.45	0.15	11.75	
	For Island Kerb		1	74.00	0.45	0.15	5.00	
	For Footpath flooring		1	164.00		0.15	24.60	
	For Island flooring		1	96.00		0.15	14.40	
	For Landscape retaining wall		1	42.00	0.60	0.15	3.78	
	Total						**55.74**	Cum
5	Providing **Coursed rubble masonry** (first sort) with hard stone in foundation and plinth with Cement mortar 1:6 (1 cement : 6 coarse sand).							
	Unit	Cum						
	For Landscape retaining wall		1	42.00	0.45	0.45	8.51	
	For seating wall		1	18.00	0.45	0.45	3.65	
	Total						**12.15**	Cum
6	Providing **Brick work** with common burnt clay Non Modular bricks of class designation 3.5 in superstructure above plinth level in all shapes and sizes in Cement mortar 1:6 (1 cement : 6 coarse sand) including cost of all materials, labour, scaffolding and usage charges of machinery & other incidental charges complete as per the direction of engineer incharge of work.							
	Unit	Cum						
	For Landscape retaining wall		1	42.00	0.45	0.75	14.18	
	For seating wall		1	18.00	0.45	0.45	3.65	
	Total						**14.18**	Cum
7	Providing **15 mm cement plaster** on rough side of single or half brick wall finished with a floating coat of neat cement of mix 1:3 (1 cement: 3 fine sand) including rounding off corners wherever required smooth rendering, providing and removing scaffolding, including cost of materials, labour, curing complete as per specifications and as per directions of Engineer-in-charge.							
	Unit	Sqm						
	For Landscape retaining wall		2	42.00	--	0.75	63.00	
	For seating wall		1	18.00	--	0.90	16.20	
	Total						**79.20**	Sqm

8	Providing and laying **Black Lapotra Granite** stone flooring in linear as well as curvilinear portions of the building all complete as per the architectural drawings with 18mm thick stone slab over 20 mm (average) thick base of cement mortar 1:4 (1 cement : 4 coarse sand) laid and jointed with cement slurry and pointing with white cement slurry admixed with pigment of matching shade including rubbing , curing and polishing etc. all complete as specified and as directed by the Engineer-in-charge.							
	Unit	Sqm						

	Cladding for Landscape retaining wall		1	42.00	--	0.75	31.50	
	Coping for Landscape retaining wall		1	42.00	--	0.30	12.60	
	For seating wall		1	18.00	--	0.90	16.20	
	Cladding for Bridge wall		3	17.00	--	0.90	45.90	
	Coping for Bridge wall		3	17.00	--	0.45	22.95	
	Total						**129.15**	Sqm
9	Providing and laying **60mm** thick factory made precast M -30 grade **Cement Concrete Paver Block** as per IRC SP 63:2018 & IS 15658 for Cycle Tracks & Pedestrian Footpaths of approved shape and colour, laid in required pattern and including over 30mm thick compacted bed of coarse sand, filling the joints with fine sand etc. all complete as per the direction of Engineer-in charge. (WMM/WBM Base to be paid separately if necessary as per relevant technical							
	Unit	Sqm						
	For Footpath flooring		1	164.00		--	164.00	
	For Island flooring		1	96.00		--	96.00	
	Total						**260.00**	Sqm
10	Supplying and fixing M15 grade precast **cement concrete Kerb stone**s for Roadway, Sidewalls and gutters fixed with CM 1:3 fixed and finsihed in line as per direction of Engineer in charge. (The cost of PCC shall be paid extra)							
	600 x 300 x 150 mm size							
	Unit	M						
	For Footpath Kerb		1	174.00	--	--	174.00	
	For Island Kerb		1	74.00	--	--	74.00	
	Total						**248.00**	M
11	Providing and applying tack coat with **RS1 Bituminous Emulsion** using emulsion pressure distributor at the rate of 0.20 kg/m2 on the prepared bituminous surface cleaned with mechanical broom							
	Unit	Sqm						
	For HRPC		5	7.00	8.00	--	280.00	
	Total						**280.00**	Sqm
12	Providing and laying **Bituminous Concrete** with 100 TPH capacity hot mix plant batch type using crushed aggregates of specified grading, premixed with bituminous binder VG-30, @ 5.4 per cent of mix and filler, transporting the hot mix to work site, laying with mechanical paver finisher to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH specification clause No. 507							
	Unit	Cum						

	For HRPC							
	Below Cobble stone							
			5	7.00	3.00	0.05	5.25	
	For Slopes							
			10	7.00	3.00	0.19	39.38	
						0.5 x 2.5 x 0.15		
	Total						**44.63**	Cum
13	Providing and laying 100mm thick factory made **precast M - 40 grade Cement Concrete Paver Block** as per IRC SP 63:2018 & IS 15658 for Commercial Traffic Axle load repetitions more than 10MSA upto 20MSA for Industrial Streets, Bus & Truck parking of approved shape and colour, laid in required pattern an including over 40mm thick compacted bed of coarse sand, filling the joints with fine sand etc. all complete as per the direction of Engineer-in-charge.							
	Unit	Sqm						
	For HRPC		5	7.00	3.00	--	105.00	
	Total						**105.00**	Sqm
14	Providing and laying of **hot applied thermoplastic compound** 2.5 mm thick including reflectorising glass beads @ 250 g/m2 area, thickness of 2.5 mm is exclusive of surface applied glass beads as per IRC:35:2015.The finished surface to be level, uniform and free from streaks							
	Unit	Sqm						
	Zebra Crossings		90	4.00	0.50	--	180.00	
	End Lane		1	749.00	0.25	--	187.25	
	Divider lane		1	429.00	0.25	--	107.25	
	Pattern		1	903.00		--	903.00	
	Total						**1377.50**	Sqm
15	Supplying and Fixing of **Molded Shank Raised Pavement Markers / Cat's Eye** made of polycarbonate and ABS moulded body and reflective panels with micro prismatic lens capable of providing total internal reflection of the light entering the lens face and shall support a load of 16000 kg tested in accordance to ASTM D 4280 Type H and complying to Specifications of Category A of MORTH Circular No RW/NH/33023/10-97 DO III Dt 11.06. 1997. The height, width and length shall not exceed 50 mm, 100 mm and 102 +/- 2 mm and with minimum reflective area of 13 cm2 on each side and the slope to the base shall be 35 +/- 5 degree. The strength of detachment of the integrated cylindrical shanks, (of diameter not less than 19 +/- 2 mm and height not less than 30+/- 2 mm) from the body is to be a minimum value of 500 Kg. Fixing will be by drilling holes on the road for the shanks to go inside, without nails and using epoxy resin based adhesive as per manufacturer's recommendation and complete as directed by the engineer The contractor shall submit a two year warranty for satisfactory field							
	Unit	Sqm						
	Roads		120	--	--	--	120.00	
	Total						**120.00**	Sqm

16	**Retro-Reflectorised Traffic Signs** - Providing and fixing of retro- reflectorised cautionary, mandatory and informatory sign as per IRC:67:2022 made of Class C Type XI retro reflective sheeting fixed over 2 mm thick aluminium sheeting vide clause 801.3, 3mm/4mm thick Aluminium composite material sheet depending on the size of the sign fixed over the back support frame of min 25 x 25 x 3mm angle mounted on a mild steel circular pipe 65 NB, 3.2 mm thickness firmly fixed to the ground by means of properly designed foundation with M25 grade cement concrete 45 cm x 45 cm x 60 cm, 60 cm below ground level as per approved drawing.The sign shall be maintained as per section 12 of IRC:67:2022. **90 cm equilateral**							
	Unit	Sqm						
	Roads		40	--	--	--	40.00	
	Total						**40.00**	Sqm
17	**Road Delineators** - Supplying and installation of delineators (road way indicators, hazard markers, object markers), 80-100 cm high above ground level, painted black and white in 15 cm wide strips, fitted with 80 x 100 mm rectangular or 75 mm dia circular reflectorised panels at the top, buried or pressed into the ground and conforming to IRC-79-2019 and the drawings.							
	Unit	Each						
	Roads		40	--	--	--	40.00	
	Total						**40.00**	Each
18	**Chevron Boards** - Supply and installation of retro- reflective **Chevron signboards of 600x450mm** made out of cube corner micro prismatic grade sheeting confirming to Type XI standards of IRC:67:2022 & ASTM D 4956-09 specification & fixed over 3 mm thick Aluminium Composite Panel sheet having minimum 0.30 mm thick aluminum skin on both sides & fixed over back support frame of 25x25x 3mm MS angle frame. Supported on 75 mm dia OR 75x75x6mm Mild steel with clear height of not less than 2.1 m from the ground level to the bottom of the Sign board & 60 cm below ground level. The sign post should be painted with one coat of red oxide paint and two coats of synthetic enamel paint of black and white colour with bands of 30 cm height, firmly fixed to the ground by means of foundation with M 20 grade cement, concrete foundation size of 45 cm x 45 cm x 60 cm including cost & conveyance							
	Unit	No						
	Roads		20	--	--	--	20.00	
	Total						**20.00**	No
19	**Tubular Marker / Spring post 700 mm (Flexible Bollards)** - Providing Tubular marker made up of Polyurethane used to divide opposing lanes of road users shall be fixible in nature. Tubular marker having height 700 mm shall be having 75 mm Reboundable work zone retroreflective sheeting as per ASTM 4956 S2 (Application of Tubular Marker shall be done as							
	Unit	No						
	Roads		40	--	--	--	40.00	
	Total						**40.00**	No

	NON SR ITEMS		

20	Providing and supplying of sadarahalli grey **granite bollards** of height 0.9 m and width of 0.45m width, cut to required shape including cost of all materials, labour, transportation etc							
	Unit	Nos						
							60.00	Nos
	Civil Sub Total							

CNR RAO UNDERPASS (JUNCTION) ELECTRICAL ESTIMATE

SL No	DESCRIPTION		N	L	B	D	Qty	Unit
	POLE LIGHT							
21	Supply and erection of 14 Feet Height Street Light Pole 14 Feet Height Street Light Pole on suitable cement concrete foundation with 2.5 Feet height dia 95 mm cast iron decorative round pedestal as per design weighing not less than 37Kgs, the pedestal shall be fitted with Class 'C' G.I.Pipe 7 Feet height 75 mm outer dia and 7 feet height top pieceouter dia of 65 mm fixed by measure of threading/welding/coupling complete. (excluding foundation).							
							12.00	Nos
	POLE LIGHT FIXTURE							
22	Supply of LED pole mounting type post top lantern with pressure die cast aluminium housing body for optimal thermal dissipation. Lamp compartment comprising of anti glare clear diffuser with Injection moulded polycarbonate/ clear glass material, delivering superior light outputRated life Burning Hrs 50000 hr@ Lumen Maintenance of 70%, CCT > 5500K, IP 66 optical and electrical compartment & impact resistance of complete luminaire >IK08. Power Factor>0.9 with mains, Surge Protection- Min 5KV along with Over voltage/Overload, short circuit/ miss-wiring protection. Compatible for pole mounting with outer dia of 40mm to 50mm. Universal Voltage driver to operate wide voltage range from 100V to 270V 50/60Hz application. Compliance to IS 10322/1 EC 60598, LM 79 & LM 80 Adherence with RoHS. UL approved MCPCB LED Efficiency>1301m/w, nominal CRI >75. Luminaire manufacturer should have in- house facility accredited by NABL/CPRI & any Government certified agency & Design & Development facility certified by ISO 9001:2008. Housing with supplier word mark /name shall be Engraved / Embossing on the die cast housing/ Body part Warranty of 2 Years							
	LED Post Top Lantern with 45 W							
							12.00	Nos
	FIXING CHARGES							
23	Fixing charges of post top/ Gate/ Garden fitting /LED on the existing CI / GI or any other pipe using required size of reducer, wiring using suitable wires							
	Pg No - 56, Item No - 13.6 of PWD Ele SR Vol 6, 23-24							
							12.00	Nos
	CONDUIT & ITS ACCESSORIES							
24	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply, including all CPVC plain & brass threaded fittings, including fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and testing of joints complete as per direction of Engineer in Charge. Internal work - Exposed on wall.50 mm nominal dia Pipes							

	Total	620.00	Mtrs
	L.T. U.G. CABLES		
25	LT UG Cable. Heat shrinkable Straight Through Joint. 2.5 to 25 Sqmm		
		620.00	Mtrs
26	4 Core, 16 Sqmm, 30 No GI Wires (1.6 mm)		
		620.00	Mtrs
27	LABOUR for Aerial Bunched Conductor & Accessories. Stringing of 11 kV grade Aerial Bunched 3 Core cable of XLPE insulation of size 3x95 Sqmm + 1x70 Sqmm with Insulated		
		1240.00	Mtrs
28	Digging of Pit 1.8 Mtr depth for errection of 9 to 10 Mtr Long Steel/RCC/PSCC supports as per approved Drawing.		
	Hard Rock (By Chizling and/Or Wedging)		
		20.00	Mtrs
	WIRES & CABLES		
29	Supplying and drawing Flexible Multicore Cable manufactured with electrolytic grade flexible copper with low conductor confirming to IS:8130-1984 and (Virgin) PVC insulation sheathed suitable for working voltage upto 1100Volts as per IS-694:1990		
	3C X 4Sq.mm Copper Flexible		
		620.00	Mtrs
30	Supplying fixing and wiring earth electrode for grounding of lifts, transformers, DG sets etc. using 40 mm dia 2.9 mm thick 2.5m long GI pipe with GI funnel with mesh and suitable size reducer fixed on the top of the earth electrode.The funnel should be enclosed in a CC chamber of 400x400x400 mm with a cast iron cover. The earth electrode shall have staggered holes of 12 mm dia and the electrode should be covered 150 mm all-round with alternate layers of salt and charcoal from the bottom of the CC chamber. The connection from the electrode is to be		
	8 SWG GI Wire		
	Pg No - 54, Item No - 12.57 of PWD Ele SR Vol 6, 23-24		
		24.00	Mtrs
31	Supplying and running of GI/Copper strips for grounding connections, using necessary fixing materials as required.		
	25mm x 3mm GI Patti		
		50.00	Rmt
32	Supplying and drawing 3 core flat PVC sheathed submersible pump cable manufactured with electrolytic grade copper with flexible copper with low resistance conductor confirming to IS:8130-1984 and virgin grade PVC insulation and powder coating extruded PVC sheathed suitable for working voltage upto 1100Volts as per IS-694:1990.		
	Submersible Flat Cable 3C X 4 sqm		
		110.00	Rmt
	CONTROL PANEL		

33	Supplying and fixing Moulded Case Circuit Breaker (MCCB) over the existing wood/panel board using necessary screws, bolts, nuts, necessary phase separators, handle and wiring complete. Protection of Overload and Short circuit with thermal Magnetic/Micro processor release and Earth Fault as per IS 13947. (Icu = Ics)		
	THREE POLE		
	200Amps 36kA.		
		1.00	EACH
34	Supplying and fixing miniature circuit breakers on existing MCB distribution boards using necessary fixing materials and 'C' Type curve, indicator ON/OFF, energy cross-3 with Short circuit breaking capacity of 10K and complete wiring as required confirming to IEC 60898.		
	6-32Amps TPN		
		2.00	EACH
35	Supplying fully automatic star-delta starter Unit push button type with suitable wires, 3 contactors, one adjustable thermal timer mounted on a common base plate held in steel enclosure for use on 400/440 volts 3 phase and wired after fixing to the existing wooden board for meter		
	Upto 12.5 HP		
		2.00	EACH
36	For Distribution Transformer Centre (DTC) MS Box for housing the ETV Meter 3 Phase 4 Wire 5 Amps, with associated LT CT 0.5 Accuracy Class, ring type, with wiring Clamps, B&N and all other accessories required. (EXCLUDING ETV METER) With CT Ratio 800/5 for 500 kVA		
		2.00	EACH
37	Supplying and fixing of Modular MCB Devices (Tripper) With Breaking capacity of 6kA.		
	16 - 32 A SP		
		2.00	EACH

BRUHAT BANGALORE MAHANAGARA PALIKE

Name of the Work : Improvements to 20 numbers major junctions with greenery to improve air quality around the junction

IBLUR LAKE JUNCTION CIVIL WORKS ESTIMATE

SL no	Description of work	Unit	Nos.	Dimension			Quantity	Unit
				Length	Breadth	Depth		
1	**Earth work excavation** for Foundation by Mechanical means depth upto 1.50m, as per drawing and technical specifications, including setting out, shoring, strutting, barricading, caution lights, including cost of explosives, dressing of excavated surfaces, disposing off or levelling the excavated stuff or sorting & stacking the selected stuff for reuse in a radius of 50 m and lift upto 1.5 m including cost of labour, blasting materials, tools, usage of Machinery & all other appurtenaces required to complete the work complete.							
	In Hard Rock (requiring blasting) Depth upto 1.50m							
	Unit	Cum						
	For Footpath Kerb		1	284.00	0.45	0.30	38.34	
	For Island Kerb		1	569.00	0.45	0.30	76.82	
	For Pole Lights		0.00	0.60	0.60	0.60	0.00	
	Total						**115.16**	Cum
2	Providing and laying in position **Cement Concrete** for levelling course for all works in foundation. The granite/trap/basalt crushed graded coarse aggregates and fine aggregates as per relevant IS Codesmachine mixed, laid in layers not exceeding 150 mm thickness, well compacted using plate vibrators, including all lead & lifts, cost of all materials of quality, labour, Usage charges of machinery, curing, and all the other appurtenances required to complete the work as per technical specifications.							
	Mix **1:3:6** Using **20 mm** nominal size graded crushed coarse aggregates							
	Unit	Cum						
	For Footpath Kerb		1	284.00	0.45	0.15	19.17	
	For Island Kerb		1	569.00	0.45	0.15	38.41	
	For Footpath flooring		1	438.00		0.15	65.70	
	For Island flooring		1	493.00		0.15	73.95	
	For Pole Lights		0.00	0.60	0.60	0.60	0.00	
	Total						**197.23**	Cum
3	Providing, laying, spreading and compacting graded stone aggregate to **wet mix macadam** specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver/grader in sub-base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density. MORTH Specification No. 406							
	Unit	Cum						
	For Footpath Kerb		1	92.00	0.45	0.15	6.21	
	For Island Kerb		1	122.00	0.45	0.15	8.24	
	For Footpath flooring		1	438.00		0.15	65.70	
	For Island flooring		1	493.00		0.15	73.95	
	Total						**80.15**	Cum
4	Providing and laying **60mm** thick factory made precast M -30 grade **Cement Concrete Paver Block** as per IRC SP 63:2018 & IS 15658 for Cycle Tracks & Pedestrian Footpaths of approved shape and colour, laid in required pattern and including over 30mm thick compacted bed of coarse sand, filling the joints with fine sand etc. all complete as per the direction of Engineer-in charge. (WMM/WBM Base to be paid separately if necessary as per relevant technical specification).							
	Unit	Sqm						
	For Footpath flooring		1	438.00		--	438.00	
	For Island flooring		1	493.00		--	493.00	

	Total						**931.00**	Sqm
5	Supplying and fixing M15 grade precast **cement concrete Kerb stone**s for Roadway, Sidewalls and gutters fixed with CM 1:3 fixed and finsihed in line as per direction of Engineer in charge. (The cost of PCC shall be paid extra)							
	600 x 300 x 150 mm size							
	Unit	M						
	For Footpath Kerb		1	284.00	--	--	284.00	
	For Island Kerb		1	569.00	--	--	569.00	
	Total						**853.00**	M
6	Providing and laying 100mm thick factory made **precast M - 40 grade Cement Concrete Paver Block** as per IRC SP 63:2018 & IS 15658 for Commercial Traffic Axle load repetitions more than 10MSA upto 20MSA for Industrial Streets, Bus & Truck parking of approved shape and colour, laid in required pattern an including over 40mm thick compacted bed of coarse sand, filling the joints with fine sand etc. all complete as per the direction of Engineer-in-charge.							
	Unit	Sqm						
	For HRPC		1	7.00	3.00	--	21.00	
	Total						**21.00**	Sqm
7	Providing and laying of **hot applied thermoplastic compound** 2.5 mm thick including reflectorising glass beads @ 250 g/m2 area, thickness of 2.5 mm is exclusive of surface applied glass beads as per IRC:35:2015.The finished surface to be level, uniform and free from streaks and holes.							
	Unit	Sqm						
	Zebra Crossings		90	4.00	0.50	--	180.00	
	End Lane		1	468.00	0.25	--	117.00	
	Divider lane		1	524.00	0.25	--	131.00	
	Total						**428.00**	Sqm
8	Supplying and Fixing of **Molded Shank Raised Pavement Markers / Cat's Eye** made of polycarbonate and ABS moulded body and reflective panels with micro prismatic lens capable of providing total internal reflection of the light entering the lens face and shall support a load of 16000 kg tested in accordance to ASTM D 4280 Type H and complying to Specifications of Category A of MORTH Circular No RW/NH/33023/10-97 DO III Dt 11.06. 1997. The height, width and length shall not exceed 50 mm, 100 mm and 102 +/- 2 mm and with minimum reflective area of 13 cm2 on each side and the slope to the base shall be 35 +/- 5 degree. The strength of detachment of the integrated cylindrical shanks, (of diameter not less than 19 +/- 2 mm and height not less than 30+/- 2 mm) from the body is to be a minimum value of 500 Kg. Fixing will be by drilling holes on the road for the shanks to go inside, without nails and using epoxy resin based adhesive as per manufacturer's recommendation and complete as directed by the engineer.The contractor shall submit a two year warranty for satisfactory field performance including stipulated retro-reflectance of the reflecting panel, to the Engineer.							
	Unit	Sqm						
	Roads		160	--	--	--	160.00	
	Total						**160.00**	Sqm
9	**Retro-Reflectorised Traffic Signs** - Providing and fixing of retro- reflectorised cautionary, mandatory and informatory sign as per IRC:67:2022 made of Class C Type XI retro reflective sheeting fixed over 2 mm thick aluminium sheeting vide clause 801.3, 3mm/4mm thick Aluminium composite material sheet depending on the size of the sign fixed over the back support frame of min 25 x 25 x 3mm angle mounted on a mild steel circular pipe 65 NB, 3.2 mm thickness firmly fixed to the ground by means of properly designed foundation with M25 grade cement concrete 45 cm x 45 cm x 60 cm, 60 cm below ground level as per approved drawing.The sign shall be maintained as per section 12 of IRC:67:2022. **90 cm equilateral triangle**							
	Unit	Sqm						

	Roads		40	--	--	--	40.00	
	Total						**40.00**	Sqm
10	**Road Delineators** - Supplying and installation of delineators (road way indicators, hazard markers, object markers), 80-100 cm high above ground level, painted black and white in 15 cm wide strips, fitted with 80 x 100 mm rectangular or 75 mm dia circular reflectorised panels at the top, buried or pressed into the ground and conforming to IRC-79-2019 and the drawings.							
	Unit	Each						
	Roads		40	--	--	--	40.00	
	Total						**40.00**	Each
11	**Chevron Boards** - Supply and installation of retro- reflective **Chevron signboards of 600x450mm** made out of cube corner micro prismatic grade sheeting confirming to Type XI standards of IRC:67:2022 & ASTM D 4956-09 specification & fixed over 3 mm thick Aluminium Composite Panel sheet having minimum 0.30 mm thick aluminum skin on both sides & fixed over back support frame of 25x25x 3mm MS angle frame. Supported on 75 mm dia OR 75x75x6mm Mild steel with clear height of not less than 2.1 m from the ground level to the bottom of the Sign board & 60 cm below ground level. The sign post should be painted with one coat of red oxide paint and two coats of synthetic enamel paint of black and white colour with bands of 30 cm height, firmly fixed to the ground by means of foundation with M 20 grade cement, concrete foundation size of 45 cm x 45 cm x 60 cm including cost & conveyance of all materials, equipment, machinery & Labour with all leads and lifts for satisfactory completion of the work as directed by Engineer incharge.							
	Unit	No						
	Roads		20	--	--	--	20.00	
	Total						**20.00**	No
12	**Tubular Marker / Spring post 700 mm (Flexible Bollards)** - Providing Tubular marker made up of Polyurethane used to divide opposing lanes of road users shall be fixible in nature. Tubular marker having height 700 mm shall be having 75 mm Reboundable work zone retroreflective sheeting as per ASTM 4956 S2 (Application of Tubular Marker shall be done as per IRC:SP 55:2014)							
	Unit	No						
	Roads		40	--	--	--	40.00	
	Total						**40.00**	No
	NON SR ITEMS							
13	Providing and supplying of sadarahalli grey **granite bollards** of height 0.9 m and width of 0.45m width, cut to required shape including cost of all materials, labour, transportation etc							
	Unit	Nos						
							25.00	Nos

BRUHAT BANGALORE MAHANAGARA PALIKE

Name of the Work : Improvements to 20 numbers major junctions with greenery to improve air quality around the junction

SANGOLLI RAYANNA JUNCTION CIVIL WORKS ESTIMATE

SL no	Description of work	Unit	Nos.	Dimension			Quantity	Unit
				Length	Breadth	Depth		
1	**Dismantling guard rails** by manual means and disposal of dismantled material with all lifts and lead, stacking serviceable materials and unserviceable materials separately.. MORTH Specification No. 202							
	DETAIL	M						
	For fencing		1	220.00	--	--	220.00	
	Total						**220.00**	M
2	**Dismantling of existing structures** like culverts, bridges, retaining walls and other structure comprising of masonry, cement concrete, wood work, steel work, including T&P and scaffolding wherever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts complete as per specifications. iiv) **Dismantling Stone Masonry** MORTH Specification No. 202							
	2.10.B. **Rubble stone masonry** in cement mortar							
	Unit	Cum						
	Stone wall for fencing		1	220.00	0.60	1.20	158.40	
	Total						**158.40**	Cum
3	**Dismantling of existing structures** like culverts, bridges, retaining walls and other structure comprising of masonry, cement concrete, wood work, steel work, including T&P and scaffolding wherever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts complete as per specifications. i) Lime /Cement Concrete. I. By Manual Means: :B. Cement Concrete Grade M-15 & M-20. MORTH Specification No. 202.							
	Unit	Cum						

	Breaking and excavating of existing concrete structure for police chowki		1	12.00		0.90	10.80	
	Total						**10.80**	Cum
4	**Earth work excavation** for Foundation by Mechanical means depth upto 1.50m, as per drawing and technical specifications, including setting out, shoring, strutting, barricading, caution lights, including cost of explosives, dressing of excavated surfaces, disposing off or levelling the excavated stuff or sorting & stacking the selected stuff for reuse in a radius of 50 m and lift upto 1.5 m including cost of labour, blasting materials, tools, usage of Machinery & all other appurtenaces required to complete the work complete.							
	In Hard Rock (requiring blasting) Depth upto 1.50m							
	Unit	Cum						
	Fountain tank 1 base		1	42.00		1.20	50.40	
	Fountain tank 2 base		1	62.00		1.20	74.40	

	Center island Retaining wall		1	55.00		0.60	33.00	
	Total						**157.80**	Cum

5	Loading and Unloading of Stone Boulder/Stone aggregates/Sand/Kankar/Moorum. (Tipper 5.5							
	Basic Rate Rs.	₹ 135.00						
	Unit	Cum						
	Total						**16.00**	hr
6	Providing and laying in position **Cement Concrete** for levelling course for all works in foundation. The granite/trap/basalt crushed graded coarse aggregates and fine aggregates as per relevant IS Codesmachine mixed, laid in layers not exceeding 150 mm thickness, well compacted using plate vibrators, including all lead & lifts, cost of all materials of quality, labour, Usage charges of machinery, curing, and all the other appurtenances required to complete the work as per technical specifications.							
	Mix **1:3:6** Using **20 mm** nominal size graded crushed coarse aggregates							
	Unit	Cum						

	Fountain tank 1 base		1	32.00		0.15	4.80	
	Fountain tank 2 base		1	52.00		0.15	7.80	
	Fountain tank 1 wall		1	25.00	0.30	0.15	1.13	
	Fountain tank 2 wall		1	35.00	0.30	0.15	1.58	
	For Kerb		1	146.00	0.30	0.15	6.57	
	For Footpath Flooring statue side		1	176.00		0.15	26.40	
	For Footpath Flooring near fountain		1	46.00		0.15	6.90	
	For Footpath Flooring police chowki side		1	58.00		0.15	8.70	
	Center island Retaining wall		1	55.00		0.15	8.25	
	For Flooring on the road		1	856.00		0.15	128.40	
	Police Chowki base		1	12.00		0.30	3.60	
	Total						**204.12**	Cum
7	Providing, laying, spreading and compacting graded stone aggregate to **wet mix macadam** specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver/grader in sub-base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density. MORTH Specification No. 406							
	Unit	Cum						
	Fountain tank 1 base		1	32.00		0.15	4.80	
	Fountain tank 2 base		1	52.00		0.15	7.80	
	For Footpath Flooring near statue side		1	176.00		0.15	26.40	
	For Footpath Flooring near fountain		1	46.00		0.15	6.90	
	For Footpath Flooring police chowki side		1	58.00		0.15	8.70	
	Center island Retaining wall		1	55.00		0.15	8.25	
	For Flooring on the road		1	856.00		0.15	128.40	
	Police Chowki base		1	12.00		0.15	1.80	
	Total						**193.05**	Cum

8	**Ready Mix Concrete** (RMC) with Cement & Cementitious Materials. Providing and laying in position Ready Mixed or Batch Mixed concrete as per IS 10262 mix design procedure for Cement Concrete works in all types of Structures other than Road works, using coarse aggregate and fine aggregate derived from natural sources, Ordinary Portland Cement (OPC) @ 75% & GGBS @ 25% proportion, admixtures to accelerate / retard setting of concrete, to improve durability and workability without impairing strength; including pumping of concrete to site of laying, curing, carriage for all leads; but excluding the cost of centering, shuttering, finishing and reinforcement as per direction of the Engineer-in-charge.							
	Unit	Cum						
	Police Chowki base		1	12.00		0.90	10.80	
	Total						**10.80**	Cum
9	Steel Fabrication. Supplying, fitting and placing TMT FE 550 / 550D **Steel Reinforcement** including cost of all materials, machinery, labour, cleaning, straightening, cutting, bending, hooking, laping/welding joints, tying with binding wire / soft annealed steel wire and other ancilary operations complete as per drawing and technical specification. All other type of structures							
	Unit	Tonne						
	Considering 80kg/Cum for item No.8	(10.8)*0.08					**0.86**	Tonne

10	Providing **Coursed rubble masonry** (first sort) with hard stone in foundation and plinth with Cement mortar 1:6 (1 cement : 6 coarse sand).							
	Unit	Cum						
	Fountain tank 1 wall		1	25.00	0.45	0.90	10.13	
	Fountain tank 2 wall		1	35.00	0.45	0.90	14.18	
	Island wall		1	176.00	0.45	0.60	47.52	
	Center island Retaining wall		1	55.00	0.45	0.90	22.28	
	Total						**94.10**	Cum
11	Providing and constructing **load bearing wall** with Solid **Concrete blocks** of size **400x200x200mm** having block density more than 1800kg/m3 and minimum compressive strength of 4.00 N/mm2 conforming to IS 2185 (Part - I) - 2005 and constructed with CM 1:4 as per IS 2572:2005 including cost of all materials, labour, scaffolding and curing, usage charges of machinery etc complete as per specifications.							
	Unit	Sqm						
	Fountain tank 1 wall		1	25.00		0.90	22.50	
	Fountain tank 2 wall		1	35.00		0.90	31.50	
	Center island Retaining wall		1	55.00		0.60	33.00	
	Total						**87.00**	Sqm
12	Providing **Brick work** with common burnt clay Non Modular bricks of class designation 3.5 in superstructure above plinth level in all shapes and sizes in Cement mortar 1:6 (1 cement : 6 coarse sand) including cost of all materials, labour, scaffolding and usage charges of machinery & other incidental charges complete as per the direction of engineer incharge of work.							
	Unit	Cum						

	Shield profile wall in center island		8	6.00		0.60	28.80	
	For Seating		1	10.00	0.60	0.60	3.60	
	Total						**32.40**	Cum
13	Providing **15 mm cement plaster** on rough side of single or half brick wall finished with a floating coat of neat cement of mix 1:3 (1 cement: 3 fine sand) including rounding off corners wherever required smooth rendering, providing and removing scaffolding, including cost of materials, labour, curing complete as per specifications and as per directions of Engineer-in-charge.							
	Unit	Sqm						
	Fountain tank 1 wall		2	25.00		0.90	45.00	
	Fountain tank 2 wall		2	35.00		0.90	63.00	
	Fountain tank 1 wall coping		1	25.00		0.30	7.50	
	Fountain tank 2 wall coping		1	35.00		0.30	10.50	
	Center island Retaining wall		2	55.00		0.60	66.00	
	Shield profile coping in center island		8	6.00		--	48.00	
	Shield profile wall in center island		8	27.00		0.60	129.60	
	For Seating		3	10.00	0.60	--	18.00	
	Total						**387.60**	Sqm
14	Providing & Applying Crystalline **waterproofing** slurry coat RCC structure like Retaining wall, Underground tank. The material having chemical resistance properties, seals shrinkage cracks up to 0.4 mm width, capable of preventing water dampness & seepages, Water permeability is Nil confirms to BS EN 12390 Part 8: 2000. Powder to water mixed at a ratio (5:2) 5 parts powder and 2 parts water, applied @ 1.5kg/m2 in 2 coats to achieve 1.0mm DFT on a cleaned surface free from all loose materials etc., complete. The finished cost to include surface preparation completely as per specification.							
	Unit	Sqm						
	Fountain tank 1 wall inside		1	25.00	--	0.60	15.00	
	Fountain tank 2 wall inside		1	35.00	--	0.60	21.00	
	Fountain tank 1 base		1	32.00		--	32.00	
	Fountain tank 2 base		1	52.00		--	52.00	
	Center island Retaining wall		1	55.00		0.60	33.00	
	Total						**153.00**	Sqm
15	Providing and laying flooring and steps fine dressed **granite stone slabs 40 mm** thick on cement mortar bed 1:6, 25 mm thick, and pointed with cement mortar 1:3 over existing cement concrete bed , including cost of materials, mortar, labour, curing complete as per specifications.							
	Unit	Sqm						
	For Footpath Flooring statue side		1	146.00			146.00	
	For Footpath Flooring near fountain		1	46.00		0.15	6.90	
	For Footpath Flooring police chowki side		1	58.00			58.00	
	Total						**210.90**	Sqm

16	Providing and laying **Black Lapotra Granite** stone flooring in linear as well as curvilinear portions of the building all complete as per the architectural drawings with 18mm thick stone slab over 20 mm (average) thick base of cement mortar 1:4 (1 cement : 4 coarse sand) laid and jointed with cement slurry and pointing with white cement slurry admixed with pigment of matching shade including rubbing , curing and polishing etc. all complete as specified and as directed by the Engineer-in-charge.							
	Unit	Sqm						
	Cladding for inside fountain tank 1 wall		2	25.00		0.60	30.00	
	Cladding for inside fountain tank 2 wall		2	35.00		0.60	42.00	
	Coping for fountain tank 1 wall		2	25.00		0.45	22.50	
	Coping for fountain tank 2 wall		2	35.00		0.45	31.50	
	Total						**126.00**	Sqm
17	Supplying and fixing M15 grade precast **cement concrete Kerb stone**s for Roadway, Sidewalls and gutters fixed with CM 1:3 fixed and finsihed in line as per direction of Engineer in charge. (The cost of PCC shall be paid extra)							
	600 x 300 x 150 mm size							
	Unit	M						
	KERB		1	191.00			191.00	
							191.00	M
18	Providing and applying tack coat with **RS1 Bituminous Emulsion** using emulsion pressure distributor at the rate of 0.20 kg/m2 on the prepared bituminous surface cleaned with mechanical broom							
	Unit	Sqm						
	For HRPC		2	10.00	8.00	--	160.00	
	Total						**160.00**	Sqm

19	Providing and laying **Bituminous Concrete** with 100 TPH capacity hot mix plant batch type using crushed aggregates of specified grading, premixed with bituminous binder VG-30, @ 5.4 per cent of mix and filler, transporting the hot mix to work site, laying with mechanical paver finisher to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH specification clause No. 507 complete in							
	Unit	Cum						
	For HRPC							
	Below Cobble stone							
			2	10.00	3.00	0.05	3.00	
	For Slopes							
			4	10.00	3.00	0.19	22.50	
						0.5 x 2.5 x 0.15		
	Total						**25.50**	Cum

20	Providing and laying 100mm thick factory made **precast M - 40 grade Cement Concrete Paver Block** as per IRC SP 63:2018 & IS 15658 for Commercial Traffic Axle load repetitions more than 10MSA upto 20MSA for Industrial Streets, Bus & Truck parking of approved shape and colour, laid in required pattern an including over 40mm thick compacted bed of coarse sand, filling the joints with fine sand etc. all complete as per the direction of Engineer-in-charge.							
	Unit	Sqm						
	For HRPC		2	10.00	3.00	--	60.00	
	Total						**60.00**	Sqm
21	Providing and laying of **hot applied thermoplastic compound** 2.5 mm thick including reflectorising glass beads @ 250 g/m2 area, thickness of 2.5 mm is exclusive of surface applied glass beads as per IRC:35:2015.The finished surface to be level, uniform and free from streaks and							
	Unit	Sqm						
	For HRPC Slopes		2	2.50	0.50	--	2.50	
	For Stop Lane		20	7.00	0.25	--	35.00	
	Zebra Crossings		90	4.00	0.50	--	180.00	
	End Lane		1	1120.00	0.25	--	280.00	
	Divider lane		1	981.00	0.25	--	245.25	
	For pattern on the road center		1	884.00		--	884.00	
	Total						**1626.75**	Sqm
22	Supplying and Fixing of **Molded Shank Raised Pavement Markers / Cat's Eye** made of polycarbonate and ABS moulded body and reflective panels with micro prismatic lens capable of providing total internal reflection of the light entering the lens face and shall support a load of 16000 kg tested in accordance to ASTM D 4280 Type H and complying to Specifications of Category A of MORTH Circular No RW/NH/33023/10-97 DO III Dt 11.06. 1997. The height, width and length shall not exceed 50 mm, 100 mm and 102 +/- 2 mm and with minimum reflective area of 13 cm2 on each side and the slope to the base shall be 35 +/- 5 degree. The strength of detachment of the integrated cylindrical shanks, (of diameter not less than 19 +/- 2 mm and height not less than 30+/- 2 mm) from the body is to be a minimum value of 500 Kg. Fixing will be by drilling holes on the road for the shanks to go inside, without nails and using epoxy resin based adhesive as per manufacturer's recommendation and complete as directed by the engineer The contractor shall submit a two year warranty for satisfactory field performance							
	Unit	Sqm						
	Roads		240	--	--	--	240.00	
	Total						**240.00**	Sqm
23	**Retro-Reflectorised Traffic Signs** - Providing and fixing of retro- reflectorised cautionary, mandatory and informatory sign as per IRC:67:2022 made of Class C Type XI retro reflective sheeting fixed over 2 mm thick aluminium sheeting vide clause 801.3, 3mm/4mm thick Aluminium composite material sheet depending on the size of the sign fixed over the back support frame of min 25 x 25 x 3mm angle mounted on a mild steel circular pipe 65 NB, 3.2 mm thickness firmly fixed to the ground by means of properly designed foundation with M25 grade cement concrete 45 cm x 45 cm x 60 cm, 60 cm below ground level as per approved drawing.The sign shall be maintained as per section 12 of IRC:67:2022. **90 cm equilateral triangle**							
	PW, P&IWTD SR 2023-24, VOL-III, Pg No 64, Item No. 8.6.(ii)							
	Unit	Sqm						

	Roads		60	--	--	--	60.00	
	Total						**60.00**	Sqm
24	**Road Delineators** - Supplying and installation of delineators (road way indicators, hazard markers, object markers), 80-100 cm high above ground level, painted black and white in 15 cm wide strips, fitted with 80 x 100 mm rectangular or 75 mm dia circular reflectorised panels at the top, buried or pressed into the ground and conforming to IRC-79-2019 and the drawings.							
	Unit	Each						
	Roads		50	--	--	--	50.00	
	Total						**50.00**	Each
25	**Chevron Boards** - Supply and installation of retro- reflective **Chevron signboards of 600x450mm** made out of cube corner micro prismatic grade sheeting confirming to Type XI standards of IRC:67:2022 & ASTM D 4956-09 specification & fixed over 3 mm thick Aluminium Composite Panel sheet having minimum 0.30 mm thick aluminum skin on both sides & fixed over back support frame of 25x25x 3mm MS angle frame. Supported on 75 mm dia OR 75x75x6mm Mild steel with clear height of not less than 2.1 m from the ground level to the bottom of the Sign board & 60 cm below ground level. The sign post should be painted with one coat of red oxide paint and two coats of synthetic enamel paint of black and white colour with bands of 30 cm height, firmly fixed to the ground by means of foundation with M 20 grade cement, concrete foundation size of 45 cm x 45 cm x 60 cm including cost & conveyance of all materials, equipment, machinery &							
	Unit	No						
	Roads		20	--	--	--	20.00	
	Total						**20.00**	No
26	**Tubular Marker / Spring post 700 mm (Flexible Bollards)** - Providing Tubular marker made up of Polyurethane used to divide opposing lanes of road users shall be fixible in nature. Tubular marker having height 700 mm shall be having 75 mm Reboundable work zone retroreflective sheeting as per ASTM 4956 S2 (Application of Tubular Marker shall be done as per IRC:SP							
	Unit	No						
	Roads		40	--	--	--	40.00	
	Total						**40.00**	No
	NON SR ITEMS							
27	Providing and fixing **Granite kerb stones** made out of C.C. 1:2:4 with top and bottom width 114 and 165 mm respectively, 400mm high and 450mm in length finished with CM 1:3 plastering and finishing cutting, including form work, curing, including cost of all materials, labour, hire charges of machinery, loading, unloading, lead and lift, transportation etc., complete.							
	Unit	NOS						
	KERB		1	146.00			146.00	mtrs
			./0.45				**324.44**	NOS

28	Providing and laying heavy duty **cobble stones interlock pavers of 100mm thick,** using cement and course sand for manufacture of blocks of approved size, shape and colour with a minimum compressive strength of 281 kg per sqm over 50mm thick sand bed (average thickness) and compacting with plate vibrator having 3 tons compaction force thereby forcing part of sand underneath to come up in between joints, final compaction of paver surface joints into its final level, including cost of materials, labour and HOM complete as per specifications.							
	Unit	Sqm						
	Flooring on the road		1	856.00			856.00	
	Total						**856.00**	Sqm

29	Providing and laying of **Stone based Grit plaster** of stone aggregates size of 6mm to 10mm mixed with15mm thick cement over existing cement concrete bed, including cost of all materials, washing, one coat of polishing, labour, curing, transportation complete as per specifications directed by Engineer-in-charge of the work.							
	Unit	Sqm						
	Center island Retaining wall cladding		1	55.00	--	0.75	41.25	
	Center island Retaining wall coping		1	55.00	--	0.60	33.00	
	For Seating		3	10.00	0.60	--	18.00	
	Total						**92.25**	Sqm
30	Providing and supplying of sadarahalli grey **granite bollards** of height 0.9 m and width of 0.45m width, cut to required shape including cost of all materials, labour, transportation etc							
	Unit	Nos						
							60.00	Nos

31	Providing and installing **INFORMATION BOARD** as per Architect's design of size 2.5mx1.5mx0.6m including carving, fixing, installation with necessary Units required, specifications including cost of all materials, labours, hire charges of machinaries with all lead and lifts, transportation including loading and unloading, complete as directed by consultants and							
							1.00	Nos
	Civil Sub Total							

SANGOLLI RAYANNA JUNCTION ELECTRICAL ESTIMATE

SL No	DESCRIPTION		N	L	B	D	Qty	Unit
	POLE LIGHT							
32	Supply and erection of 14 Feet Height Street Light Pole 14 Feet Height Street Light Pole on suitable cement concrete foundation with 2.5 Feet height dia 95 mm cast iron decorative round pedestal as per design weighing not less than 37Kgs, the pedestal shall be fitted with Class 'C' G.I.Pipe 7 Feet height 75 mm outer dia and 7 feet height top pieceouter dia of 65 mm fixed by measure of threading/welding/coupling complete. (excluding foundation).							
							40.00	Nos
	POLE LIGHT FIXTURE							

33	Supply of LED pole mounting type post top lantern with pressure die cast aluminium housing body for optimal thermal dissipation. Lamp compartment comprising of anti glare clear diffuser with Injection moulded polycarbonate/ clear glass material, delivering superior light outputRated life Burning Hrs 50000 hr@ Lumen Maintenance of 70%, CCT > 5500K, IP 66 optical and electrical compartment & impact resistance of complete luminaire >IK08. Power Factor>0.9 with mains, Surge Protection- Min 5KV along with Over voltage/Overload, short circuit/ miss-wiring protection. Compatible for pole mounting with outer dia of 40mm to 50mm. Universal Voltage driver to operate wide voltage range from 100V to 270V 50/60Hz application. Compliance to IS 10322/1 EC 60598, LM 79 & LM 80 Adherence with RoHS. UL approved MCPCB LED Efficiency>1301m/w, nominal CRI >75. Luminaire manufacturer should have in- house facility accredited by NABL/CPRI & any Government certified agency & Design & Development facility certified by ISO 9001:2008. Housing with supplier word mark /name shall be Engraved / Embossing on the die cast housing/ Body part Warranty of 2 Years against anymanufacturing defect working under standard electrical conditions as mentioned above should be given by LED manufacturer & Cree/Nichia/ Lumileds/Osram make LED Source.		
	LED Post Top Lantern with 45 W		
		40.00	Nos
	FIXING CHARGES		
34	Fixing charges of post top/ Gate/ Garden fitting /LED on the existing CI / GI or any other pipe using required size of reducer, wiring using suitable wires		
		40.00	Nos
	CONDUIT & ITS ACCESSORIES		
35	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply, including all CPVC plain & brass threaded fittings, including fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and testing of joints complete as per direction of Engineer in Charge. Internal work - Exposed on		
	Total	210.00	Mtrs
	L.T. U.G. CABLES		
36	LT UG Cable. Heat shrinkable Straight Through Joint. 2.5 to 25 Sqmm		
		890.00	Mtrs
37	4 Core, 16 Sqmm, 30 No GI Wires (1.6 mm)		
		890.00	Mtrs
38	LABOUR for Aerial Bunched Conductor & Accessories. Stringing of 11 kV grade Aerial Bunched 3 Core cable of XLPE insulation of size 3x95 Sqmm + 1x70 Sqmm with Insulated Messenger Wire		
		1780.00	Mtrs
39	Digging of Pit 1.8 Mtr depth for errection of 9 to 10 Mtr Long Steel/RCC/PSCC supports as per approved Drawing.		
	Hard Rock (By Chizling and/Or Wedging)		
		20.00	Mtrs
	WIRES & CABLES		

40	Supplying and drawing Flexible Multicore Cable manufactured with electrolytic grade flexible copper with low conductor confirming to IS:8130-1984 and (Virgin) PVC insulation sheathed suitable for working voltage upto 1100Volts as per IS-694:1990		
	3C X 4Sq.mm Copper Flexible		
		110.00	Mtrs
41	Supplying fixing and wiring earth electrode for grounding of lifts, transformers, DG sets etc. using 40 mm dia 2.9 mm thick 2.5m long GI pipe with GI funnel with mesh and suitable size reducer fixed on the top of the earth electrode.The funnel should be enclosed in a CC chamber of 400x400x400 mm with a cast iron cover. The earth electrode shall have staggered holes of 12 mm dia and the electrode should be covered 150 mm all-round with alternate layers of salt and charcoal from the bottom of the CC chamber. The connection from the electrode is to be		
	8 SWG GI Wire		
		80.00	Mtrs
42	Supplying and running of GI/Copper strips for grounding connections, using necessary fixing materials as required.		
	25mm x 3mm GI Patti		
		50.00	Rmt
43	Supplying and drawing 3 core flat PVC sheathed submersible pump cable manufactured with electrolytic grade copper with flexible copper with low resistance conductor confirming to IS:8130-1984 and virgin grade PVC insulation and powder coating extruded PVC sheathed suitable for working voltage upto 1100Volts as per IS-694:1990.		
	Submersible Flat Cable 3C X 4 sqm		
		110.00	Rmt
	CONTROL PANEL		
44	Supplying and fixing Moulded Case Circuit Breaker (MCCB) over the existing wood/panel board using necessary screws, bolts, nuts, necessary phase separators, handle and wiring complete. Protection of Overload and Short circuit with thermal Magnetic/Micro processor release and Earth Fault as per IS 13947. (Icu = Ics)		
	THREE POLE		
	200Amps 36kA.		
		1.00	EACH
45	Supplying and fixing miniature circuit breakers on existing MCB distribution boards using necessary fixing materials and 'C' Type curve, indicator ON/OFF, energy cross-3 with Short circuit breaking capacity of 10K and complete wiring as required confirming to IEC 60898.		
	6-32Amps TPN		
		2.00	EACH
46	Supplying fully automatic star-delta starter Unit push button type with suitable wires, 3 contactors, one adjustable thermal timer mounted on a common base plate held in steel enclosure for use on 400/440 volts 3 phase and wired after fixing to the existing wooden board for motor		
	Upto 12.5 HP		
		2.00	EACH

47	For Distribution Transformer Centre (DTC) MS Box for housing the ETV Meter 3 Phase 4 Wire 5 Amps, with associated LT CT 0.5 Accuracy Class, ring type, with wiring Clamps, B&N and all other accessories required. (EXCLUDING ETV METER) With CT Ratio 800/5 for 500 kVA DTC		
		2.00	EACH
48	Supplying and fixing of Modular MCB Devices (Tripper) With Breaking capacity of 6kA.		
	16 - 32 A SP		
		2.00	EACH
	NON SR ITEMS		
49	Supply and Installation of 200 watt RGB focus LED light with 2 way connector for each light. Technical Specification • Luminaire made up of die cast dark grey powder coated aluminium alloy with non corrosive SS fasteners with low copper content. • Luminaire prewired with LED driver and Suitable for operation on 240V, 50Hz single phase ac supply. IP67 , mechanical resistance IK08	4.00	EACH
50	Supply and Installation of 50 watt UPLIGHTERS LED light with 2 way connector for each light. Technical Specification • Luminaire made up of die cast dark grey powder coated aluminium alloy with non corrosive SS fasteners with low copper content. • Luminaire prewired with LED driver and Suitable for operation on 240V, 50Hz single phase ac supply. IP67 , mechanical resistance IK08	25.00	EACH
51	Supply and Installation of 10watt focus WALL LED light with 2 way connector for each light. Technical Specification • Luminaire made up of die cast dark grey powder coated aluminium alloy with non corrosive SS fasteners with low copper content. • Luminaire prewired with LED driver and Suitable for operation on 240V, 50Hz single phase ac supply. IP67 , mechanical resistance IK08	25.00	EACH
52	Supply and Installation of 6 watt LED FOOT light with 2 way connector for eachlight. Technical Specification • Luminaire made up of die cast dark grey powder coated aluminium alloy with non corrosive SS fasteners with low copper content. • Luminaire prewired with LED driver and Suitable for operation on 240V, 50Hz single phase ac supply. IP67 , mechanical resistance IK08	25.00	EACH
53	Supply ,installation, testing and commissioning of Nozzle mounted 18W/12V LED RGB Underwater LED Light fitting in IP 68 standard with SS fittings & accessories to fix out the LED lights	24.00	EACH